

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—23RD YEAR.

SYDNEY, SATURDAY, MAY 16, 1936.

No. 20.

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The Beattie-Smith Lectures.¹

(UNIVERSITY OF MELBOURNE.)

AN APPROACH TO THE INTERPRETATION AND TO THE TREATMENT OF THE PSYCHONEUROSES AND THE PSYCHOSES.

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LECTURE I.

THE subject which I have chosen for the Beattie-Smith Memorial Lectures for 1934 is "An Approach to the Interpretation and to the Treatment of the Psychoneuroses and the Psychoses".

¹ Delivered December, 1934; received for publication March 29, 1936.

The Chairman has made reference to the late Dr. Beattie-Smith; the word "sane", which Professor Osborne in his introductory remarks used of Dr. Beattie-Smith, is the one which has constantly been in my mind as I have thought of the founder of these lectures. I think perhaps that I never met a man who impressed me more as the embodiment of rationality than Dr. Beattie-Smith. The extraordinary sanity of his total reaction to the surging insanity around him is a thing that I shall never forget. But there was something more than sanity in his reactions. The special recollection which stands out in my memory, and one, I think, which gives the key to so much of the good that Dr. Beattie-Smith was able to do, is this. One morning we were with him in the wards of the asylum. After examining one of the patients he turned to us students and said: "This good fellow is one of the very best of patients when sick, and, when well,

one of the finest and best of men." It was this sympathy of Dr. Beattie-Smith that secured for him so much of his success.

In student days we students were wont to be counselled by that best of teachers, Sir Richard Stawell, to "get a philosophic conception" of the cases we were called upon to investigate. I have tried to follow out that advice of Sir Richard. I think it necessary, if we are to come to a real understanding of disease, that we doctors seek to pass onward from that knowledge of facts which is called "science" toward that wisdom which is called "philosophy". If such an endeavour be necessary for disease in general, I am convinced that it is essential if we are to come to any understanding of the psychoneuroses and the psychoses.

Disease has been defined as "the failure of adaptation between the organism and the environment". This definition I find satisfactory and satisfying. It involves that we should clarify our ideas concerning the organism, the environment and the nature of the fitness between them.

First, then, as to the nature of the environment—the physical world in which we live. In the latter part of my lecture I shall speak with respect and appreciation of the thought and teaching of Sir James Jeans, but there is a point in which, it seems to me, his conceptions are unsatisfactory. In his book, "The Mysterious Universe", he describes in outline the cosmos as he understands it. He sees the inorganic dominant and the organic almost an accident in a hostile process of physics. Such a view, I believe, reflects the preconceptions and mental preoccupations of the physicist. Interpretation of the cosmos and the evolutionary process surely must be made in the light, not of beginnings, but of end results. Not quantity of stuff, but quality of function, should properly focus attention. Surely the biologist cannot allow the dictum of the physicist that life is an accident in the scheme of things; more convincingly, I think, he may maintain the thesis that the universe is actually "biocentric".

The idea of fitness between the organism and the environment must proceed from a conception which involves not only the fitting of the organism to the environment, but the inherent fitness of and prévenience (to use a word of the theologians) in the environment for the organism.

In attempting to reach to a philosophic conception of the environment and of the organism, I would ask you to let your minds dwell for a moment on the conception of the physical world as the expression of a rational order. Pre-scientific thought conceived of it as an irrational order, but increasingly science has demonstrated it as rational order. This idea was part and parcel of Greek thought. It glows in the teachings of Plato. This conception of Nature as a manifestation of rationality has indeed been described as among the most characteristic of Greek speculations. The same idea of a rational order is also prominent in Hebrew thought. It may be said to inform the whole of the Hebrew interpretation. One might paraphrase the opening words of Genesis: "God said: 'Let there be

a rational order', and there was a rational order." This conception of Greek and Hebrew thought, held to so firmly by the ancients, has had an extraordinary confirmation from modern science. I do not need to dwell on this fact. Many have read Sir James Jeans's book, "The Mysterious Universe"; and the sum and substance of its argument is that the universe is indeed the expression of a rational order. This same idea is summed up in these words, which are at the heart of an Adam's prize essay, "A Theory of Gravity", by a fellow student¹ with Jeans at Cambridge: "To me, as to Hegel, matter is thought that has taken form, and time incarnates a logical process." There could be no clearer and more convincing statement of conviction of the rationality of the environment in which life is set than that.

Next, what of the living organism and the nature of the bodies which have to fit themselves and adapt themselves to this rational order? I hesitate to talk on physiology before my old professor, especially when I remember that the conspicuous thing about my place in the physiology class was its mediocrity. Still, I am older now, and my professor has forgotten my shortcomings, so I shall venture not merely on physiology, but on some philosophic comments about physiology. It is obvious, and indeed axiomatic, from the whole trend of modern thought that our bodies are part of that same material which I have described as rational order. The material order itself we now know to be electrical in its constitution, and in a very real sense I think we have to conceive of these bodies of ours as electrical units. As I have understood those very interesting experiments which Dr. Kellaway has been demonstrating in his research institute, they evidence the possibility that the changes in electrical potential called forth by the sounds and tunes which go into the ear of an animal may be picked up again from the internal ear and auditory centre in the brain and reproduced as the original tune.

The evidence suggests that the brain is an electric unit of such constitution that it is as definitely the expression and manifestation of purpose imposed on matter as is a gramophone record; but the brain is more than an electrical receptor; it is an effector which imposes material and electrical expression of meaning and purpose on matter, and all the time, we must suppose, is self-patterning its own essence and structure according to these meanings and purposes. The American alienist White suggests that animal organs are to be conceived as "structuralized function". In like vein Professor Wood Jones stresses urge of purposiveness as the key to the interpretation of the evolutionary process.

The idea of the organism as expression of purpose is summed up in a phrase which I owe to my friend Mr. S. S. Addison, B.Sc.: that our bodies and especially our brains are "electrical units patterning to purpose".

The philosophic conception of environment and organism, then, that I lay before you is of an

¹ The late Professor S. B. McLaren.

environment which is the electrical (a) expression of a rationality and (b) animal bodies which are electrical units, expressions of and expressing rationality and purpose.

But the being with whom we are concerned in this lecture on the psychoneuroses and the psychoses is, of course, man. I very much doubt whether organisms below the status of man do show much real evidence of psychoneuroses, and even less of the psychoses. Man, dogmatically, is a rational being; it is about this part of his nature—his rationality—that I am chiefly concerned in these lectures on the psychoneuroses and the psychoses. Another and tremendous postulate which I make is that man is a free-will agent. The conception of free will is difficult. It is extremely difficult if one commences with the assumption—as it was the nineteenth century assumption—that the universe is a closed system physically determined. With such preconception the idea of free will is not only difficult, it is well-nigh impossible. But we discover that such an assumption—and it is only a philosophical assumption—is not inevitable. Rid of preconceptions, the idea of free will is no more difficult, and more in accord with experience of life, than that of determinism; and if authority is to carry any weight in such consideration we may recall that the idea won the assent of the lucid intellect of Kant; his second postulate of the practical reason, "freedom", is my postulate also, and in my view is an essential necessity to the understanding of the psychoses. Belief in freedom, it must be admitted, confronts modern thought with the paradox of free will and universal law, but there is a paradox in the nature of ultimate truth, as Chesterton has urged. Another philosopher, one of the most outstanding physicists of his day, Niels Bohr, has said that paradox is a necessity of all deeper thought and is as fundamental in Nature as that if there is a concave there must necessarily be also a convex. For myself, if I may be allowed a word of personal history, the problem has always had a tremendous interest. In student days I once jeopardized my chances in an anatomy examination because the day before the examination I became so interested in the problem of free will and determinism that I neglected in part the last minute revision which my inadequate knowledge of the subject so urgently demanded. Nor shall I ever forget the day, away in a remote country village in Korea, when, reading a little book on Bergson's philosophy, there was resolved for my mind the paradox—a paradox which had pressed upon it for years—of universal law and free will. Literally, for a day I scarcely spoke, I was so overcome with the intellectual relief and satisfaction at the resolution of a decade's difficulty of thought.

The reason that I have thus stressed the idea of free will is that we must pass on from it to the conception of disease as a disharmony. I have spoken of the environment as rational, and of the organism as the embodiment of purpositiveness towards rationality. But there is evidence in psychoses and psychoneuroses of disharmony, and

not only of disharmony, but of irrationality also. Here there emerges one of the most interesting and striking phenomena that scientific thought has evidenced: that it is possible to give a scientific and rational description of the origins and manifestations of the irrational. That is what modern psychological medical thinking is: rational thinking about and description of and explanation of the irrational. If ever facts seemed irreducible to order, they were these facts of mental disease; yet the student of the writings of modern psychopathology finds that irrationality rationally and illuminatingly described.

I pass now to a consideration of the causes of the psychoneuroses and the psychoses. My time is too brief to allow me to marshal the evidence. I shall allow myself, therefore, this much dogmatism: the broad statement that the causes are both physical and psychical. Few observers would, I think, take exception to such a general statement.

I speak first of the physical origin of nervous diseases. There are injuries, physical and chemical, to the nervous system which bring about a change in the psychological and mental make-up of the persons affected. None will take issue with me here. I need not labour this point. But what I am concerned to deal with, and to deal with in some detail, is this question: What is the measure of the dependence of the psyche, or soul, upon the brain? To what extent in cases of brain injury is the total personality of the patient changed? From the recognition of the fact that physical and physiological injury causes mental change it is very easy to slip over into the depression and pessimism of the view which says that the psyche, or soul, is nothing other than the product of the brain cells. Medical psychologists meeting disease are apt to say that a certain type of deterioration of the psyche, or soul, must inevitably follow a certain postulated injury to the brain. For a long time I felt myself compelled to accept such a position. I think it is not prejudice, not an evasion of the facts, that leads me now to reject such an interpretation. There is a saying of Bacon in which he quotes Seneca to the effect that "that were true greatness to have in one the frailty of a man and the security of a god". Now it is a frail barque indeed in which we all voyage through life. There is grim evidence of the insecurity which comes to us as beings, physical and physiological. Is it possible to have with the insecurity of a man the security of a god? I think it is possible. I think we do see some human beings who have been so grounded and educated, so integrated and unified in their life purpose, that, though brain is injured and though with injury dulling or even obliteration of function results, yet what might be called the direction of the purpose and the personality cannot be changed. Take such a moving example of the driving power of a purpose, in spite of disorganization and dissolution of the physical, as that evidenced by Scott and his party on their journey from the Pole. To the very end steadfastness of purpose and personality never failed. Scott's brain was dying together with the

rest of his body, but in such a man as he the final surviving and strongest thing of all is demonstrated to be his soul—his strong courage and indomitable purpose. But some may argue like this: Granted that in the case of a man like Scott (where, after all, the incidence of mortal assault was more on the vital organs of physical existence) we may witness the persistence of the highest values of the personality till the moment of actual death, is there any evidence that character and essential values of the soul may survive the ravages of actual primary brain disease? It is true that with sufficiently serious brain injury all individuals become unconscious and finally die, but it is not usually the case, though it is often considered to be, that a like physical trauma will lead to the same mental degradation in two different individuals. To make the distinction concrete: we are commonly told in text-books that the physical and psychological sequence of cerebral irritation and such brain trauma is that the patient lies curled up in bed, is angry when roused, and apt to be profane. Perhaps in the majority of patients these symptoms will supervene, but I believe, in the cases of some, with special background, training and ideals, the consequences in behaviour would be quite different. If one were to venture a conjecture of the symptoms manifested by a Nero and a Saint Francis of Assisi, each supposed to be dying of the same pathological condition in the brain, there would, I am convinced, be the widest difference in the psychological states manifested at the time of dissolution between a moral pervert like Nero and the saint who was able to write thus of man's apparent ultimate defeat: "Thanks be to my Lord, for our Sister, the Death of the Body."

Mental change there always is in brain disease, but (contrary to that pessimism stated in the Book of Ecclesiastes, "How doth the wise man die even as the fool") experience proves that poles asunder in dissolution are they—the craven, pitiable in his last defeat, and triumphant Great-heart who "passed over and all the trumpets sounded". Foster describes "a man who intrepidly dares everything that can oppose or attack him within the whole sphere of mortality; who will press towards his object while death is impending over him; who would retain his purpose unshaken amidst the ruins of the world". Such men there are.

But I go further than to suppose that the psychological change effected in different patients with like mental disease is profoundly different according to the conceptions and ideals which the patient has built up through life. There is, I think, more than a little evidence pointing to the fact that bodily disease itself tends to be widely different, depending on the ideas and purposes of the individual affected. The numbers I quote are too small to justify the drawing of conclusions, but there are facts of my experience which suggest, for instance, that the antibodies produced in defence of the syphilitic invasion are greater in the vigorous-minded than in those of another habit. Among my missionary colleagues

through the Korean peninsula I have knowledge of five who, in the course of their work, have sustained accidental infection with syphilis; in the case of one of them the disease was contracted before the era of active arsenical treatment. It is interesting that in the case of none, nor of any of their children, has there been evidence of any very serious or devitalizing consequences.

To pursue this theme of surviving values through conditions of disease, a similar survival power is to be recognized, I believe, not only in cases of recognized brain pathology, but also through the course and in the manifestations of the symptoms of a true psychosis.

I recall the history of a case, related to me by a relative of the patient, a very intelligent woman.

The patient was a young officer who went through one of the very desperate campaigns in the World War—that in South Africa. Nearly all his regiment perished, not by the comparatively easy way of falling from shot and shell, but by hardship, starvation and thirst. He was one of the very few survivors. Through this terrible ordeal it had been his constant purpose, following the high traditions of an officer in the British Army, to care for the welfare of his men. He returned, one of a mere handful of survivors, but had become mentally alienated and was sent as an inmate to a mental hospital in Britain. From his sister I received this striking testimony. She used to visit him, taking with her dainties for his use. He was still psychotic and imagined that his fellow inmates were still in the distress of the campaign. He refused to touch the delicacies till all the others were served.

This was a striking demonstration that, in some people, there are things of upbringing, education and personality which survive even through the stress of grave mental disease.

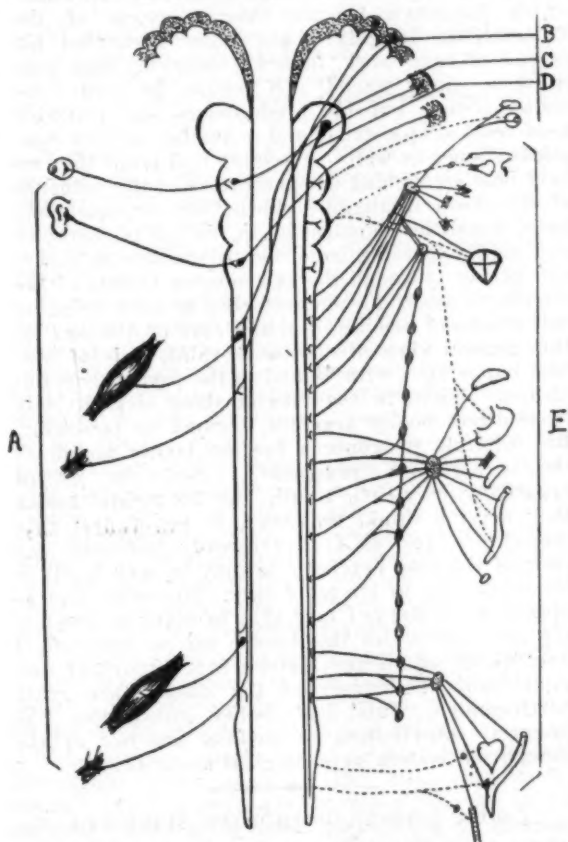
I come now, having laid so much basis for what I wish to lead up to, to discuss with you briefly a few main points concerning the structure of the nervous system.

The anatomic nomenclature that I am about to use is not, I understand, yet adopted in this medical school.

The general structure of the nervous system is that of an upper neurone from brain to cord and of a lower neurone from cord to periphery. But there are in fact within the total nerve organization of the body two systems, each built on these lines. The first system is that usually known as the voluntary nervous system, or, adopting the nomenclature which I prefer, the "exteroceptor nervous system". By this system man imposes himself upon his environment, and through it he is conscious of his environment. By it he moves his muscles, builds his aeroplanes and erects his shrines. In and through it, too, he writes his poetry, sings his music, offers his prayers and seeks to commune with the Divine.

There is another system biologically much older than the exteroceptor. Physiologically and anatomically its general structure is similar. It arises in its upper neurones from the grey matter—the basal nuclei—at the base of the brain. From the cells in these nuclei processes run down to the sympathetic chain. The lower neurones which arise in this sympathetic chain supply the whole of the viscera

of the body, including the arterioles and sweat glands of the integument. This second system is called the "enterofector system". On it man's organic life, his metabolism, his health and well-being depend. To an extraordinary and immediate degree man alters the functioning of the enterofector system through his exterolector system. Of this fact we have ample evidence. Conscious anger dries up the secretions of the stomach and digestion is retarded. In like manner the circulation and the blood pressure are affected. Sex functions are profoundly modified. In the human species, I come to believe, sex function is much more a matter of



Schema of nervous system. The subdivisions (sympathetic and parasympathetic) of the enterofector system are represented respectively by continuous and broken lines. A = lower neurones of enterofector system passing to voluntary muscle and sense organs; B = cortex; C = diencephalon; D = upper neurones of enterofector system; E = lower neurones of enterofector system passing to viscera. (Diagram by courtesy of Professor M. H. Choi, Department of Anatomy, Severance Union Medical College.)

psychology than of physiology. Thermal regulation is normally a function of the enterofector system, but may be affected by the exterolector system. Children have normally a much lower thermal stability than adults. I recall that when I was a resident medical officer at the Children's Hospital we used to find that temperatures were always higher on visiting day; not usually, I think, because the parents gave the children indigestible food

(the nurses safeguarded against that), but because of the sheer excitement of the day. I recall a striking instance in my own family.

My child, a girl of about two and a half or three years, who for various reasons had had to live a particularly sheltered and quiet life, was invited to a children's party in the next house. I still remember the fascinated interest that shone in the eyes of the child as she saw for the first time the wonders of the Christmas tree, with its lighted candles, and as she listened to the Christmas songs. She was not indulged with edibles, yet within an hour she had a temperature of 103° F.

Here is direct evidence of the psychological influence exerted upon the basal nuclei. From such an incident one might find some explanation of the first of the healing miracles recorded of Jesus—the healing of the raging fever of Peter's wife's mother by the influence of that amazing personality upon her exterolector and thence on her enterofector system. Such a suggestion is by no means outside the range of recorded medical experience. I would suggest further that the vital problem of health is bound up with the proper psychological functioning of the enterofector system (with its centre probably in the basal and juxtapositioned nuclei) and with the due control of these nuclei by the exterolector system. The interpretation—indeed the description—which I advance of the varying symptom-complexes met with in the study of mental and nervous disease is that when the incidence of disease is on the enterofector system there is manifested a psychoneurosis. A psychosis, on the other hand, is a dysfunction of (an entity to which one is compelled to give a name) the psyche, man's soul, his purpose and meanings in life. I am, of course, quite prepared to admit that, were our methods fine enough, we might in all such cases find evidence of dysfunction of the cortical cells of the exterolector system. I am not, however, prepared to start off with the assumption—and assumption it is, not scientific, but philosophical and philosophically materialistic—that the cause of disturbance in the psyche is prior change in brain cells. Indeed, even though pathological change could always be demonstrated in such cases (actually our methods do not yet uniformly allow of such demonstration), we would not be nearer, from such demonstration alone, to proof that such change was the cause and not the effect of emotional disturbance, mental attitude and soul trauma. We know, for instance, that such a purely psychic attitude as remorse can cause the acid-secreting cells in the stomach to lose their function. *A fortiori*, it is reasonable to expect that a like emotion might even more profoundly affect structure as well as physiological function of cerebral cortical cells, for these are anatomically and physiologically nearer to the seat of the emotion than the cells of the stomach.

I wish now to draw attention to some facts which have not, I think, had sufficient recognition and definition in the study and treatment of nerve disease. There are persons, as William James has pointed out, with reactions so sensitive that they have been spoken of as "hair-trigger" in their constitution. This constitution is apt to go with

what I call an easy "spill-over" from the psyche into the enterofector system. Recognizing the fact of the spill-over of the emotions into the body, the American surgeon Crile has gone so far as to attach great importance to fear, anxiety and like emotions in the aetiology of even such a pronounced and unmistakably organic lesion as duodenal ulcer. Nor is it difficult to understand the physiological factors involved. The blood supply to the mucous membranes of the stomach, the secretion of hydrochloric acid, and the peristalsis of the bowel are all disturbed by emotion; for under emotion influences pass from the exterolector system to the enterofector system, and so if the emotion is severe or prolonged the stage is set for grave organic end results.

What is not sufficiently recognized is that such spill-over does not occur, or occurs to a minimum degree, in some persons. Such individuals are what may be called "compartmental" in their build. Some races manifest this spill-over characteristic more strongly, I believe, than others. The Jewish race exhibits it to a marked degree. Their literature shows this, and experience gives evidence of it too. The Russian is another race among whom this type is common. The surgeons at the Peking Medical College have become chary of operations under local anaesthetics on Russians and Jews. The greater risk of spill-over from the psyche into the enterofector system makes such patients unsuitable for local anaesthesia.

I personally happen to be one of the "compartmental" type. Such a constitution relieves one of some sorts of trouble and probably exposes one to some others to which the "spill-over" type is not exposed. Neither type, I think, is entitled to pride itself at the expense of the other. It was not that I was less frightened in my soul than my fellows of the spill-over type that, for instance, my war experience carried for me no threat of a breakdown along the well recognized Army Medical Corps diagnosis of "D.A.H." (deranged action of the heart). A passing palpitation was the extent of the physical disability from which I suffered, though I was at times more than uncomfortable in my soul. This also is true: a "compartmental" patient might be distracted in mind to the stage of a veritable psychosis and remain with it all in good general health and without disturbance of the enterofector system.

To sum up, in all of us the processes of organic life, of the functioning of the body generally, of resistance to disease, in a word, of health, depend on the functioning and control of the enterofector system. Some, indeed, there are whose enterofector system seems to function satisfactorily in spite of psychic disturbance. But, at least for the spill-over type of individual, the central problem of health would seem to be just this: How can we bring healthful energies to bear upon the enterofector system, and particularly its central head nuclei? It is, of course (indeed this, up to date, has been the main preoccupation of medical science), possible

often to counteract end results in the body (for example, neutralize a hypoacidity or rest an ulcer by a short-circuiting anastomosis); but these, after all, are at the best but treatment at the periphery. Is it possible to bring health-bringing energies to the help of the enterofector system itself? I believe it is, and that it is the most necessary advance that must be made in the medical and healing art. We are far too apt to overlook the fact that such energies are in point of fact part of our common experience.

There is a striking passage in the biography of William Osler about the truly marvellous results which happened in the chronic wards of the Philadelphia Hospital when Osler instituted his *régime* of hard work, interest, sympathy and hope in those dingy wards. Of course, he used some simple drugs, but his predecessors had probably used some simple drugs and a number of very complicated ones as well. Is not the real point that we have here convincing demonstration of the influence of all those intangible, subtle, but tremendously potent qualities, summed up in the words character and ability, passing from one personality to others and acting (through the exterolector system of the recipient) upon the enterofector system, bringing end results of amelioration and cure of disease? If this general view of disease is valid, it is of first rate importance with regard to the psychoneurotic; also, no doubt, in the case of those sick in body from direct bodily accident, trauma or poisoning. But what is its concern for the bodily health of the straight-out psychotic? Probably, except negatively, very little at all. For his mental health they may, I think, be shown to be of first rate importance, for, as I have already indicated, my view of the true psychotic is that he may be ill in his mind, and in his mind only. Moreover, and as almost a corollary, I hold that in many at least of the true psychotics the disease can be understood only as we admit the fact—a fact important and vital—that the causes of the disease are truly psychogenic. This last belief constitutes the essential contribution to medical practice of the thought of modern psychological medicine.

SOME ASPECTS OF THORACIC SURGERY.¹

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THORACIC SURGERY has made such great progress of recent years that it should prove a very useful subject for a discussion such as this. It is obvious that in the time at our disposal this evening a review covering the whole range of thoracic surgery would be so superficial as to be of little value. For this reason it has seemed wise to limit this paper to a consideration of some of the principles underlying this branch of surgery, and to a discussion of one or

¹ Read at a meeting of the South Australian Branch of the British Medical Association on February 27, 1936.

two conditions in which the value of surgery has recently been established. There has recently been a tremendous increase in the literature on this subject, thus helping us to decide in what conditions resort to operation may fairly be advised.

The fascination of the subject is perhaps increased by the diversity of opinions held as to the conditions which may justifiably be subjected to surgery, and also as to the best operative procedure to employ. These differences of opinion emphasize the truth suggested in a stanza in "Rabbi Ben Ezra", quoted by Osler in "Æquinitas":

Now, who shall arbitrate?
Ten men love what I hate,
Shun what I follow, slight what I receive:
Ten, who in ears and eyes
Match me: we all surmise.
They this thing, and I that: whom shall my soul
believe?

It would be well if we would bear in mind, particularly during the developmental stage of a subject, that our "medical facts" are mostly surmise; thus might be avoided much of the rancour that has too frequently marred discussions on medical subjects.

If thoracic surgery is to advance as it should, and to accomplish what it can, it is essential that there should be a very real and loyal cooperation between the physician, the surgeon, the radiologist and the anaesthetist. Some authorities have suggested that the surgeon practising thoracic surgery should be his own physician. But it seems to the writer much better that a surgeon and physician should cooperate, for most surgeons will admit that the candid criticism of their results by physicians is always helpful and stimulating—even if not always kind. If this cooperation is to be happily maintained, it is of course essential that the physicians should be kept informed of the advances made in surgical technique, with consequent improvement in results.

Some understanding of the physiology of respiration is of vital importance to one undertaking thoracic surgery, but only very brief mention of this aspect of the subject will be made in this paper.

Tidal air *plus* complemental air *plus* supplemental air equals vital capacity. The vital capacity is related to dyspnoea, and is lowest in the prone position. This is of great importance in thoracic surgery—the smaller the difference between tidal air and vital capacity, the greater becomes the danger of any operation involving an open pneumothorax.

EFFECTS OF ALTERATIONS OF INTRAPLEURAL PRESSURE.

In the third century B.C. it was recognized that an open wound involving the pleural cavity was fatal. In spite of this early recognition of the dangers of an open pneumothorax, an understanding of the mechanism behind these fatalities is of comparatively recent date. We owe much to the research work of Graham for our knowledge of intrapleural pressure, both under normal conditions and in the presence of an open wound in the chest wall. Briefly, it may be stated that normally the pressure in the pleural cavity is negative (-7 to -9 millimetres

of mercury with quiet inspiration; -3 to -5 with quiet expiration). Coughing may produce a positive pressure.

With a normal mediastinum, if the intrapleural pressure on one side be altered, an almost similar alteration will occur on the other side. Graham found that if one pleural cavity is inflated with air at a pressure of 10 centimetres of water, the pressure in the other pleural cavity will be from 8.0 to 9.5 centimetres. He later found that this applied only for low pressures—the higher the pressure used, the greater the difference on the two sides.

The presence of fluid or gas in the pleural space alters the intrapleural pressure; but with gas this alteration, in the absence of adhesions, is evenly distributed throughout the pleural cavity, whereas with fluid the main effect will be at the bottom of the pleural space.

Open Pneumothorax.

The effect of an open pneumothorax depends largely on the size of the opening and the vitality of the patient. An opening into the pleural space does not necessarily result in a cessation of the function of the lung on the side concerned, otherwise bilateral open pneumothorax would always be fatal. It is known that animals may survive for a considerable time with an opening into each pleural space.

If an opening is made into one pleural space there will be an immediate alteration in the pressure of that space, that is the pressure will become less negative. If there are no adhesions, and the mediastinum is not thickened, an almost similar effect will occur on the other side.

When the chest is expanded, the pressure will become more negative (unless the opening is very large); but there will be less increase in the negative pressure than there should, because some air is sucked into the pleural space through the wound (instead of entering the lung through the trachea).

Similarly, on the sound side, although the size of this half of the chest is increased normally, the inflation of the lung will be lessened because the mediastinum is allowed to bulge over to the sound side. The effect is that, with a given inspiratory effort, a much smaller amount of air enters the lungs in the presence of an open pneumothorax than in a normal chest.

To counteract this greater inspiratory efforts are made. Their success depends on several factors. The patient must manage to inhale a quantity of air equal to the "tidal air" for that patient. If he is young and vigorous his vital capacity may be about twelve times the amount of his tidal air, and he will be able to survive the effects of a large opening. But if, through illness (pneumonia, heart failure *et cetera*), his vital capacity has been greatly reduced, a much smaller opening will be fatal. Finally, if his vital capacity equals his tidal air, any opening at all is liable to be fatal. (These facts explain, in part, the tremendous diminution in the mortality of empyema, since it has become the practice to defer operation until the pneumonia has subsided and adhesions have occurred.)

The "mediastinal flutter" which was at one time thought to be largely responsible for the fatalities, because of the disturbance of the action of the heart, is now known to produce its effect mainly by hampering the attempts of the patient to inspire an increased amount of air into the sound lung.

Graham seems to have proved conclusively that the danger of an open pneumothorax in any given case is proportional to the size of the opening. But Duval considers that the danger arises because the opening is not large enough, and advocates operating with a large incision so as to allow of the immediate deflation of the lung of that side; he then delivers the lung out of the wound and expresses the air from it with a warm compress. Graham points out that by delivering the lung through the wound Duval greatly diminishes the area of the opening in the chest. But Graham overlooks what is probably an even more important factor—that by delivering the lung Duval is steadying the mediastinum and thus protecting the other side of the chest from the ill-effects of the pneumothorax.

From this discussion it will be obvious that the ill-effects of an open pneumothorax can be minimized, for the time, in one of several ways: by closing or diminishing the area of the opening (applying a wet swab or inserting gloved hands); by fixing the mediastinum (by traction on the lung); or by using positive pressure anaesthesia. The effectiveness of the first two methods in particular was amply demonstrated during the War.

BRONCHIECTASIS.

For some years several groups of workers have been treating certain cases of bronchiectasis by lobectomy. Obviously lobectomy, in the presence of infection, is a very serious procedure. To justify it the medical attendant must be satisfied that the diseased condition is such that with other treatment the patient is likely to die, or that his life will be one of misery; he must also be satisfied that the operative risk is not unreasonably great, and finally, that the patient's condition, should he survive the operation, is likely to be sufficiently improved to justify the risk.

A study of the pathological findings in cases of bronchiectasis makes one conclude that once the disease is fully established, a healing of the lesion is impossible. Aschner, in discussing important changes found in bronchiectasis, states that the bronchi and bronchioles are dilated; that the mucosa is tremendously hypertrophied and thrown into rugæ; that there is peribronchial inflammatory infiltration; and that the normal elastic laminae are absent or are represented by strands, frayed and broken by inflammatory tissue.

Robinson discusses the pathology of the condition after the study of specimens from a series of sixteen lobectomies performed for bronchiectasis. He emphasizes that bronchiectasis is a permanent dilatation of one or more bronchi. It is probable that temporary dilatations, demonstrable by radiology, and due to weakness and loss of tone of bronchial muscles, may occur; they probably occur in the early stages of the disease, and if no disintegrative changes take place in the bronchial wall,

complete restoration is quite possible. The specimens obtained after operation exhibited a fusiform or cylindrical dilatation of the bronchial tubes; the mucous membrane was soft, succulent and almost redundant in appearance. Microscopically the most marked features were the definite inflammation of the bronchial walls with, in many cases, degenerative changes in the bronchial muscle and elastic fibres (in the sub-epithelial layer). In nearly every case the cilia of the epithelial cells lining the tubes were intact. Very few ulcers of the mucosa were found, in spite of the frequency of hæmoptysis as a symptom. There was intimal thickening with stenosis of the bronchial arteries in 65% of cases.

From these descriptions it seems likely that the condition, once fully established, is likely to be progressive, or at least incurable by conservative measures; this conclusion is strongly supported by the experience of various authorities.

Lilienthal writes:

... and I repeat, a bronchiectatic suppuration, once fully established, will rarely if ever get well without extirpation, though improvement, sometimes great, may follow other measures.

The same writer, however, admits that early or incipient cases in young and vigorous subjects may terminate in recovery. He agrees that post-tonsillectomy cases, especially in children, may resolve spontaneously if there have been no gross changes in the bronchial walls. Such recoveries take place within a relatively short period following the exciting cause—up to two months.

Morrison Davies wrote, in 1930:

Except in young children, the cure of bronchiectasis, once it is established, is extremely rare by medical treatment alone.

Surgery offers some hope of success in unilateral cases, but the failures are many and the dangers are great. The proportion of cases greatly improved or cured is, however, sufficient to warrant the risks taken to relieve the patient from a disease which, when established, is most distressing and unremitting.

Hence one may fairly conclude that radical treatment, even if risky, has some justification in a disease such as this. If conservative measures, such as postural drainage, bronchoscopic aspiration *et cetera*, have failed—and these should always, of course, be tried first—then in suitable cases more radical methods must be considered. It is surely needless to stress that before surgery is resorted to sinus infection should be dealt with, and also the possibility of syphilis excluded. A foreign body, if present, should be extracted; but this will probably not result in cure. The surgical measures that have been advocated come under various headings.

Treatment.

Collapse Therapy.

Artificial pneumothorax, phrenicectomy and thoracoplasty have all been advocated. These methods can at most only relieve, never cure, the condition; the amount of sputum may be greatly diminished, but in spite of this the condition may persist or even extend. Artificial pneumothorax therapy should certainly not be employed, except possibly as a preparation for lobectomy. Phrenicectomy is in most cases an inadequate and, therefore,

unsatisfactory operation. Thoracoplasty, although it has given some very satisfactory results, does not result in actual healing of the lesion. It is therefore best reserved for cases in which the disease is too extensive, or adhesions too dense to allow excision of the diseased lung, or in which the age or physique of the patient contraindicates lobectomy.

Destruction, by Cautery.

Graham, who has employed this method extensively, writes as follows:

The operation can be recommended to those suffering from unilateral bronchiectasis, who have not responded well to simpler forms of therapy, for whom thoracoplasty is either not indicated for various reasons, or has failed to relieve the symptoms, and upon whom the performance of a lobectomy, although desirable, is unwise, or technically impossible.

In this procedure the diseased lobe must be fixed to the thoracic wall by adhesions, if not already so fixed; the diseased tissue is then gradually destroyed by the application of a heated soldering iron, through a window which has been made in the chest wall; the method requires a series of operations, allowing intervals for the burnt tissue to separate. Haemorrhage is unusual, and can, if it occurs, be controlled by pressure.

Lobectomy.

Until recently, lobectomy, although recognized as a desirable and curative procedure, has not been used extensively, because of its great mortality. Lillenthal, in 1925, quoted a mortality rate of 47% for the removal of one lobe, and of 70% when more than one lobe was removed.

Coryllos, in 1930, quoted a series of 87 patients operated on by eleven different surgeons, with 48 deaths—a mortality of 53.1%. Since then the whole outlook of this operation has been altered, owing to the work of Brunn, Shenstone, Janes, Roberts, Tudor Edwards, Nelson and others. Janes, in 1933, reported a series of 16 cases of one stage lobectomy—six of the patients were cured, the condition in three was improved, in two the condition was unimproved, and five died (31.25% mortality).

Roberts and Nelson reported, also in 1933, a series of ten cases of one-stage lobectomy, with six cures, two patients working but with slight symptoms, and two deaths (20% mortality). (In April, 1934, Mr. Roberts informed the writer that he had operated on fifty-four patients, with four deaths.)

Tudor Edwards, in 1934, was able to report a series of forty-eight lobectomies with seven deaths (14.5% mortality). In this series several deaths occurred in cases which should have been excluded—for example, patients with coexistent phthisis, or with bilateral disease—so that, in the hands of these experts, the mortality may now be considered very moderate.

Patients considered as suitable subjects for lobectomy are those in whom the disease is limited to one lobe, with or without involvement of the lingual lobe on the left side, or the middle lobe on the right. The operation is considered justifiable in patients whose sputum is large in amount, or foul; in those who have suffered from numerous pulmonary haemorrhages, whether or not there has been sufficient sputum to be in itself significant, and those in whom the disease appears to be progressive.

Roberts and Nelson also consider that patients with advanced disease in one lower lobe, and a slight amount of disease in the opposite base, should have the benefit of the operation. With reference to the proportion of patients with unilateral disease, Jex-Blake, quoted by Tudor Edwards, found that in one hundred and five autopsies performed by him, the bronchiectasis was still unilateral in sixty-one, and confined to one lobe in thirty-four patients.

During 1934 the writer had the privilege of observing some of this work in London, and was very much impressed with the excellence of the technique employed, and with the very fine results obtained.

There seems to be an impression that patients suitable for this treatment are very rare in Adelaide. This may be so; but it seems more probable that many of them are living a life of misery and hopelessness because "nothing more can be done for them".

It would appear that in view of the excellent results being obtained in other parts of the world by the performance of lobectomy for bronchiectasis, some definite effort should be made to see that any suitable patients in Adelaide are not denied similar opportunities.

Good results will be obtained only if there is a wise selection of cases, a very thorough course of pre-operative treatment, and a minute attention to detail in operative technique and post-operative treatment.

Preliminary treatment includes measures to improve the patient's general condition and to diminish the amount of sputum contained in the diseased lobe by postural drainage or bronchoscopic aspiration, or both. Some surgeons, before operation, attempt to secure adhesions between the upper lobe and the parietal pleura, so as to limit the spread of infection after lobectomy; but most authorities consider these adhesions a disadvantage, because they limit the ability of the upper lobes to fill the space left by the resected lobe.

It is often advised that an artificial pneumothorax should, if possible, be induced a few days before operation. The advantages claimed for this measure are that there is less disturbance to the patient on opening the thorax, there is less pus in the diseased lobe, and also that the empty lung does not obscure the view. However, this procedure does not seem to be essential.

Dr. Lamphee will discuss the question of anaesthesia.

The Operation.—For operation, the patient is placed in the lateral position with the healthy side on a large cushion or sand-bag; the head of the table is elevated.

A long oblique incision is made over the fifth, sixth or seventh intercostal space (fourth space for upper lobe), and deepened, dividing the muscles, and opening into the pleura for the whole length of the intercostal space. The posterior ends of the ribs are divided and the space is widely opened by a rib retractor.

Any adhesions present, including those of the upper lobe, are separated, care being taken not to risk infection by wounding the diseased lung. Occasionally the adhesions may be so dense as to make lobectomy impossible; in this event the

cautery operation or thoracoplasty must be substituted.

The pulmonary ligament is divided between clips and the lobes are separated along the oblique fissure. Two tourniquets are applied about the pedicle—the second being about one and a half inches distal to the first—and tightened. The pleural cavity and wound surfaces are packed off with strips of gauze soaked in a one in 1,000 solution of flavine. The pedicle is divided between the tourniquets and the diseased lobe removed. The raw surface of the pedicle is swabbed with flavine and a double row of continuous catgut sutures inserted, thus obliterating the vessels and the bronchi. The tourniquet is released sufficiently to test the hæmostasis, and removed if this is satisfactory. The suture line is buried by stitching the surrounding fringe of lung tissue over it; the stump is then buried with sutures in the under surface of the upper lobe.

A portion of the ninth rib, in the mid-axillary line, is removed, and a drainage tube inserted through the space and through a stab incision in the skin. One end is anchored below the pedicle; the other is clamped, and will later be used to establish negative pressure drainage.

The ribs are approximated with sutures encircling them, and the wound is closed in layers. The lung is inflated, and the drainage tube led into a bottle containing sterile water.

A blood transfusion should be given if there is any doubt about the patient's condition.

The complications most likely to occur are: pneumonia in the other lung, empyema, wound infection, secondary hæmorrhage and broncho-pleural fistula; the last is moderately common, but usually heals rapidly as the tube is shortened.

Of those patients who recover, the vast majority is virtually symptomless, while a small minority has symptoms of slight degree compared with the original symptoms. This is felt to be a most inadequate outline of a very successful attack on a most distressing disease. The early results were disheartening, but perseverance was rewarded by brilliant results; in a relatively short period the operative mortality was reduced from 50% to 14% or less.

THE VALUE OF SURGERY IN THE TREATMENT OF PHTHISIS.

Although Adelaide physicians have almost all adopted the surgical procedure of artificial pneumothorax in the treatment of suitable cases of phthisis, there appears to be a curious disinclination to utilize the more major surgical procedures that have, in carefully selected cases, proved so valuable an aid to physicians in other parts of the world.

It frequently happens that when a new method of treatment is boosted, enthusiasts tend to claim for it more than it can achieve, with the often tragic result that it is used in totally unsuitable cases; the unfortunate results produce a reaction which tends to discredit the method completely. It is felt that this has happened in Adelaide with regard to thoracoplasty; but may it be suggested that the reaction has been excessive in degree and duration?

The operations employed have as their aim either the compression or the fixation of the diseased lung,

or both. Considerable judgement is required in the selection of cases suitable for operation, and also in deciding the optimum time for surgical interference. It is advisable for the physician to discuss with the surgeon the exact extent and type of disease, so that the nature and scope of the operation may be reasonably planned.

In planning the method of securing compression of the lung, one must bear in mind what is likely to be the condition of the lung when the lesion is healed. Obviously, if it is estimated that after healing has occurred there will be sufficient normal tissue left to play an important part in respiration, the method chosen should be one that will allow this lung tissue to be utilized. Artificial pneumothorax is thus our first choice for compression therapy in most cases. Next to this one would favour some form of local compression, which although permanently placing one portion of lung out of function, will allow use of the healthy portions of lung—such methods are phrenic evulsion, apicolysis, or localized thoracoplasty. In cases of more generalized involvement of one lung the complete thoracoplasty may be indicated. Some of the indications and contraindications for thoracoplasty may be stated as follows.

Thoracoplasty must not be used in the acute exudative type of disease; it must not be used if in the other lung there is clinically active disease or if there is extensive fibrosis. We must feel sure that the other lung will be able to perform the extra functions thrust upon it, and also that this extra work will not activate any lesion present on the healthy side. The operation should not be used in cases of cachexia, with a failing heart. It is indicated in cases of unilateral fibroid phthisis with cavities and dilated bronchi; in cases of non-acute tuberculosis in which pneumothorax has been tried and failed to arrest the disease, or in which it has failed to produce collapse because of unstretchable adhesions or excessive fibrosis. It may be required in cases which after treatment by pneumothorax relapse when expansion is allowed; also in tuberculous pyothorax.

Originally the operation performed was usually a complete Sauerbruch extrapleural thoracoplasty—that is, removal of the posterior portion of the upper ten or eleven ribs, preceded by a phrenicectomy. It is now realized that in many cases less radical procedures are equally effective. A chronic cavity at the apex, in the presence of adhesions, may be allowed to heal, either by extrapleural removal of portions of the upper two or three ribs, or by the operation of apicolysis; the former method seems preferable, and can of course be used for bilateral disease of the apices. The more extensive thoracoplasties may be performed in two or even three stages, thus diminishing the surgical shock.

Results of Complete Thoracoplasty.

Alexander gave the results of 1,159 complete thoracoplasty operations as: healed, 36.8%; improved, 24.4%; no benefit or died, 38.75%.

Matson gives the following results of treatment by artificial pneumothorax: Of 235 patients in whom adhesions did not affect collapse of the lung, 48%

were clinically well and 22% died. Of 245 patients in whom pneumothorax was partial only, 11% became clinically well and 58% died. These figures indicate how much better are the results obtained by thoracoplasty in those cases in which complete pneumothorax is impossible.

CONCLUSION.

It is hoped that as a result of this discussion some steps will be taken in Adelaide to confirm or refute the results obtained by these methods in other parts of the world.

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A. J. THOMAS'S MODIFICATION OF THE THOMAS KNEE SPLINT.

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It has been recognized for many years that Thomas's knee splint is the best appliance for use in fixing a fracture of the thigh for the purpose of transport. All surgeons who served in the Great War of 1914-1918 will admit the truth of this statement. For some reason the authorities responsible for the transport of injured civilians have been slow in adopting the sound principles of first aid which were the means of saving many lives and limbs of soldiers.

Through the Divisional Surgeon, Dr. A. M. Purves, one of the writers (J.C.S.) was asked by A.J.T., Superintendent of the Sydney Municipal Council Division of the St. John Ambulance Brigade, to demonstrate the first aid use of Thomas's knee splint. J.C.S. showed a picked squad the method of applying the splint. The men quickly became expert in its use.

On making inquiries of the ambulance transport authorities we found that certain objections could be raised to the use of the standard Thomas splint. One difficulty is the great variation in the size of the thighs of civilians of both sexes and the resultant need for carrying many splints. Another is the unfortunate position that many of the

ambulance wagons are too small to accommodate a fair-sized adult lying down with his thigh in extension on a Thomas's splint. The writers are glad to learn that an honest attempt at standardization is being made, especially by Mr. Mitchell, of the Central District Ambulance.

A.J.T. was shown the *Bulletin of the American College of Surgeons*⁽¹⁾ on the treatment of fractures. In this publication he saw a sketch of a modified splint which had been used by the American Medical Services during the War. In this sketch the top ring-is replaced by a reversible half-ring. A.J.T. appreciated the advantage of this arrangement, having regard to the stowing of the splint and to the ease of application to the patient. He set to work to design a stable splint which could be packed into the smallest space, adapted to a thigh of any size, and capable of being fitted after application into the new standard ambulance wagon, allowing closure of its doors.

As the model developed, J.C.S. tried it in two cases of fracture of the femur in his ward at the Royal Prince Alfred Hospital, with the result that certain minor defects were rectified. The final design, with a scheme for the standard first aid treatment of injuries of the lower limb in general, and of fractures of the thigh in particular, was submitted by the writers to a committee of the Council of the New South Wales Branch of the British Medical Association. The committee unanimously approved the splint and the scheme.

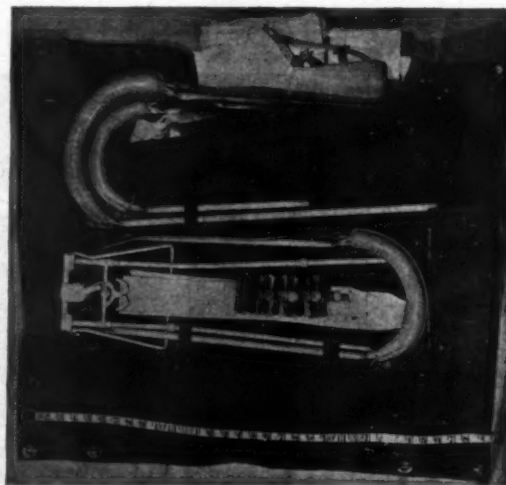


FIGURE I.

The object of the writers is to put before the medical profession and all ambulance authorities a compact splint and a definite method of improving the treatment of injured civilians during first aid. It is thought that the new splint maintains the principles of Hugh Owen Thomas and has definite advantages. J.C.S. is satisfied that it can be adopted for use in the continuous treatment of a fracture in hospital or home.

The half-circle head of the splint is made of flat mild steel, three-quarters of an inch by one-eighth of an inch on edge, well padded with cow hair and covered with bag leather. The flat mild steel allows the half circle to be narrowed or widened as required by the size of the patient's thigh, and the thick padding assures a soft pressure on the *tuber*

provide suitable friction surface and protection. The upper halves of the side bars are made of half inch bright steel tubing, the lower halves manufactured of three-eighth inch bright mild steel. Each side bar pulls in halves at its mid-point. The halves are united by means of a slot and pin and are made secure with a locking thumb-nut.

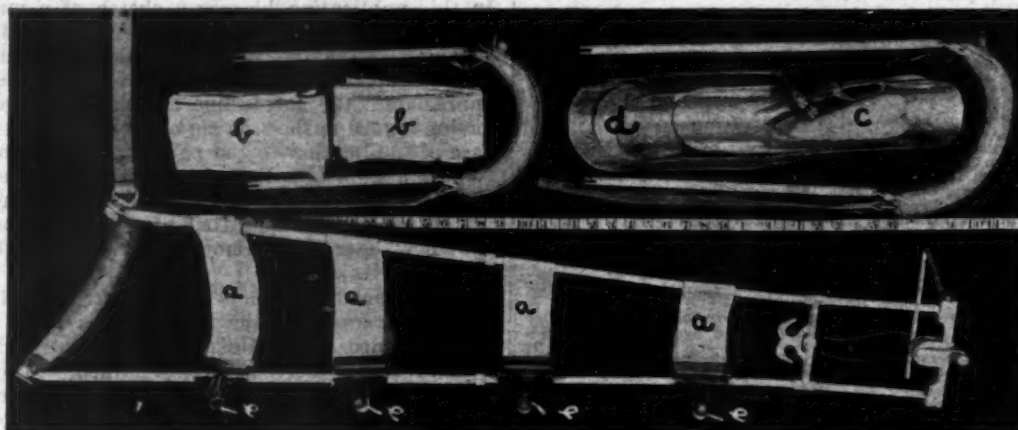


FIGURE II.

ischii. The head works on a swivel joint on each upper end of the side bars. Each flange is provided with a fixation pin attached to a short chain.

The inner end of a stout strap is fixed to a metal "D" so that the strap can be renewed without inter-

The head is permanently attached to the two upper halves, and the two ends of the lower halves have a solid cross-piece casting welded in position.

To the centre of the cross-piece are attached a small drum and ratchet, provided with a handle to

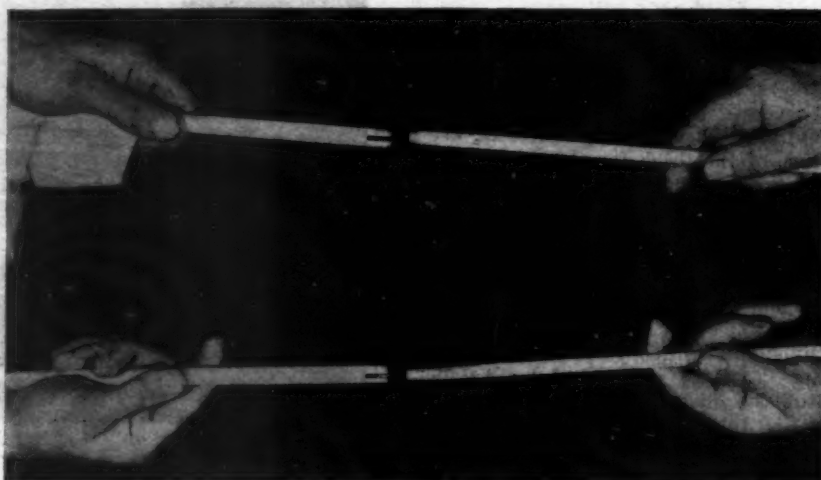


FIGURE III.

ference with the padding. The outer end fits into a buckle, so that the anterior half of the head can be adjusted to any size.

Each splint is provided with three heads: large (ten inches in diameter), medium (eight and a half inches in diameter) and small (seven inches in diameter), both halves being sprayed with zinc to

pull through a Bowden wire on a double hook which slides along the side bars for extension.

A self-retaining rest fits into the ends of the cross-piece. This rest may be folded under the side bars, placed as a support, or pulled into a superior position and used as a point for slings.

Each turn of the handle pulls the sliding hook down one-sixteenth of an inch. A release pawl is provided for the ratchet.

The whole splint (Figure I), with accessories, fits into a canvas bag two feet five inches long and one foot five inches wide and three inches thick when closed.

The length of the inner side bar is three feet six inches (large size), the outer bar being five inches

Figure III shows the method of joining the two ends.

Figure IV illustrates an improved (unassembled) stretcher bar designed by A.J.T. The uprights are one foot ten inches long and may be clamped onto any stretcher. The grooved blocks are to make them adaptable for use on hospital beds. The cross-piece is two feet long for stretchers and three feet long for hospital beds.

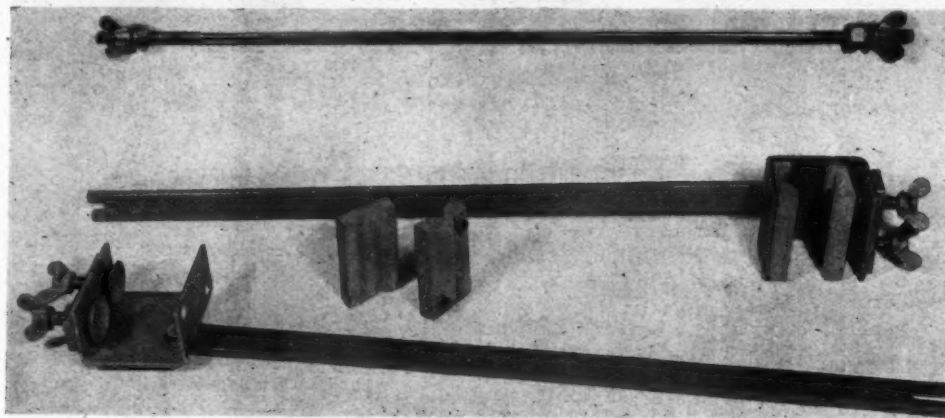


FIGURE IV.

longer. This length varies as does the length of the whole splint in the two smaller sizes. This length was determined by the length of the Civil Ambulance wagon, and is just long enough for a patient whose height is six feet. It should be three inches longer, but a splint of such length would not, when applied to the patient, fit into the wagons.

Figure II shows the splint assembled with the largest head and the other two heads and accessories placed by its side. The splint accessories are shown in Figure II as follows: *a* shows four pieces of basil two inches wide and fifteen inches long, each inner end being sewn to make a loop to slide along the inner bar. The outer ends are clamped to the outer bar with paper clips (sprayed with zinc).



FIGURE V.

b shows eight standard triangular bandages folded into "narrow bandages" (St. John pattern). *c* shows a padded leather wedge to place inside the outer part of the ring should the splint be too large. *d* shows eight aluminium gutter splints, ten by five inches, eight by five inches, ten by four inches, eight by four inches; (2) ten by three inches, (2) eighteen by four inches. *e* shows four zinc-sprayed paper clips.

Applying the Splint (Drill for Two Bearers).

Figure V shows, lying on the ground, a patient who has a fracture about the middle of his left thigh.

Figure VI illustrates the first step—assembling the splint with two basils on the upper half and two on the lower half.

Figure VII shows step 2. Number 1 bearer is placing a bottle knot with a "narrow bandage" over the shoe of the patient's limb. Number 2 is supporting the limb with flat hands (not gripping fingers) placed under the knee. The bearer should apply his hands gently but firmly, and should exert traction forwards and downwards. Number 1, having applied the bottle knot, grasps the two ends of the bandage and, in unison with Number 2, gradually takes the strain, leaning back to straighten the limb, using the weight of his own body, with elbows extended.

Figure VIII shows Number 1 maintaining the extension and Number 2 sliding the splint under the limb, pressing the ring against the *tuber ischii*. One can see by the pleased expression on the patient's face that all pain has now ceased. One of the writers (J.C.S.) knows by experience that, when a steady extension has been maintained for a few moments, such patients experience unexpected relief.

In Figure IX, Number 2 has buckled the strap over a folded triangular bandage to stop pressure, and is fastening the upper two basils, one above and one below the site of fracture (indicated by the mark on the trouser leg). Number 1 maintains the extension.

In Figure X, Number 2 now holds the traction bandage firmly on the side bars. Number 1 takes the ends round the side bars, makes them fast to the hook, and then slowly winds the handle, asking the patient to let him know if it is taut enough.

In Figure XI the two lower basils are clipped to the outer bar. An aluminium gutter splint is held behind the site of fracture and supported at each end with a turn of "narrow bandage" round each



FIGURE VI.

With the Bowden wire one can appreciate the amount of tension one is applying. The degree of pull is governed by the nature of the injury.

side bar. The ends of the bandages are tied over an anterior gutter splint. The knee is steadied by a "narrow bandage", as is the calf.



FIGURE VII.

In the case of a compound fracture or an injury of the knee, just enough tension to steady the limb would be used, and for a closed fracture of the thigh considerable extension.

In Figure XII the patient has been lifted onto the stretcher.

If the patient be conscious and the other limb uninjured, he can, while the broken limb is sup-

ported, help himself onto the stretcher. Otherwise it is advisable to obtain the aid of a bystander when lifting with two bearers. Note that the broken limb is held clear of the stretcher by means of the patent rest. In the photograph, to accentuate this

The time for complete treatment is as follows: assembling splint, ten seconds; treatment of fracture, three minutes fifty seconds, loading onto stretcher and slinging limb, two minutes forty-five seconds.

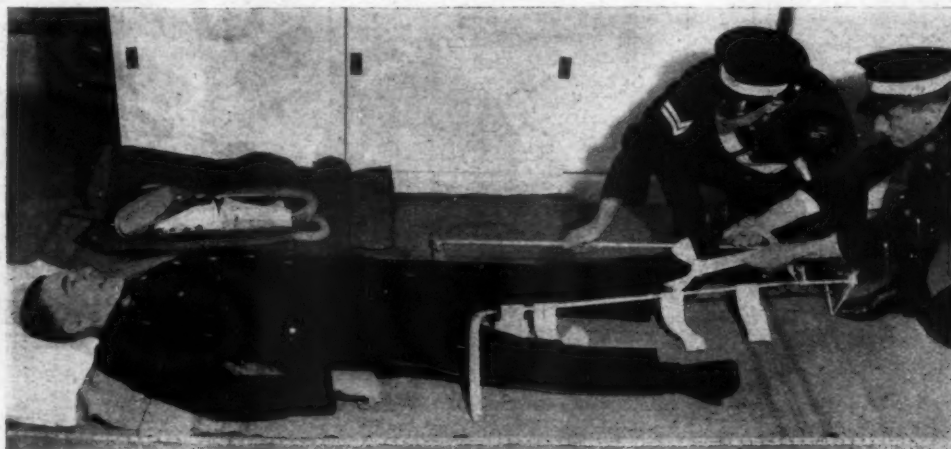


FIGURE VIII.

important point, a small box has been placed under the rest, but when the rest is on the ground the limb is still supported by the splint and not by the canvas of the stretcher.

Figure XIII shows the splint slung from the stretcher bar and the patient ready for transport. The foot-rest is folded under the splint and a clove hitch is placed on each side bar. One end of each

Details of the Bottle Knot.

The method of applying the bottle knot is copied from an article by J.C.S. published in *THE MEDICAL JOURNAL OF AUSTRALIA* of November 24, 1934.

In Figure XIV an ordinary triangular bandage is folded into a "narrow bandage". The narrow bandage is placed into the hollow of the sole of the



FIGURE IX.

bandage is fixed by a clove hitch to the cross bar and the other end to the uprights. If the left limb is being handled, the end of the splint is held near the left upright. One of the uprights is now made fast to the handle of the stretcher (the uprights are on a swivel).

boot, with one-third on the outer side and two-thirds on the inner side. Both ends are brought up alongside the leg.

In Figure XV the long end is brought across the instep below the short end, which becomes one cord of traction.

In Figure XVI the long end is taken round the back of the heel of the boot and looped through from below; to loop it from above is a common error.

their corresponding side bar and are tied to the double hook.

The application of the bottle knot is a simple procedure, but the method must be learned.

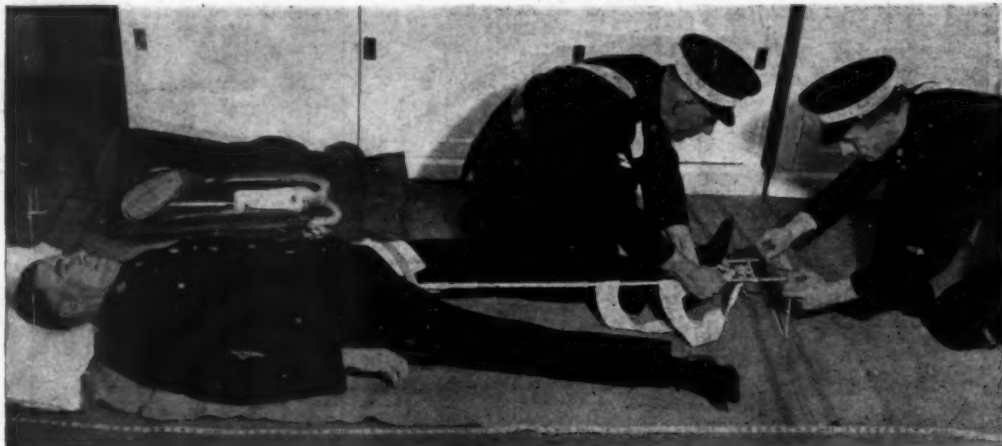


FIGURE X.

In Figure XVII both ends are pulled downwards; the knot is applied to the foot over the boot or shoe.

In Figure XVIII, while continuous traction is maintained on both ends of the bottle knot, the

The writers know of no other knot which will serve the purpose efficiently. It is important to use a "narrow bandage" which lies evenly and snugly and is not apt, like an ordinary piece of roller



FIGURE XI.

Thomas splint is applied. One end is brought under the side bar and one end over the other side bar. The ends are tied firmly in a reef knot in the U-slot provided in the end of the splint.

When the A. J. Thomas splint is used, the ends of both bandages may be taken either under or over

bandage, to cause pressure on a particular point. It will be noticed that it is impossible to compress the posterior tibial artery with a bottle knot, which may be left in position over the boot for many hours.

Scheme of First Aid.

1. Every person who suffers from a fracture of the thigh or of the leg down to the lower third, or a severe injury of the lower limb, excluding those

4. Every hospital should keep an exchange kit in the casualty room. When the patient is brought to the hospital the limb is left undisturbed and the patient is put to bed until seen by the respon-

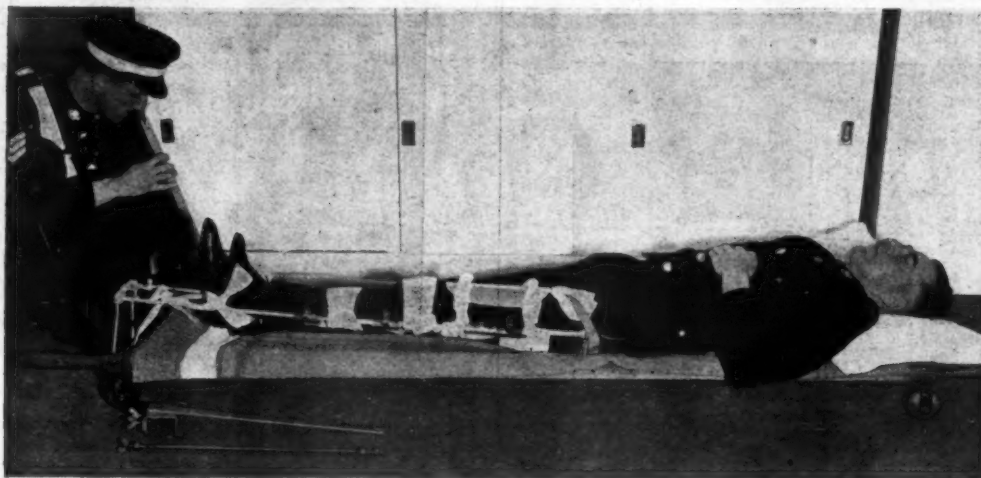


FIGURE XII.

of the ankle and such wounds as are high enough in the region of the hip and of such a nature as to render the application of the upper ring impracticable, should have the described splint applied

sible surgeon, who will usually find the limb in a good position.

The ambulance will hand over any part of the kit not used and collect a complete similar kit

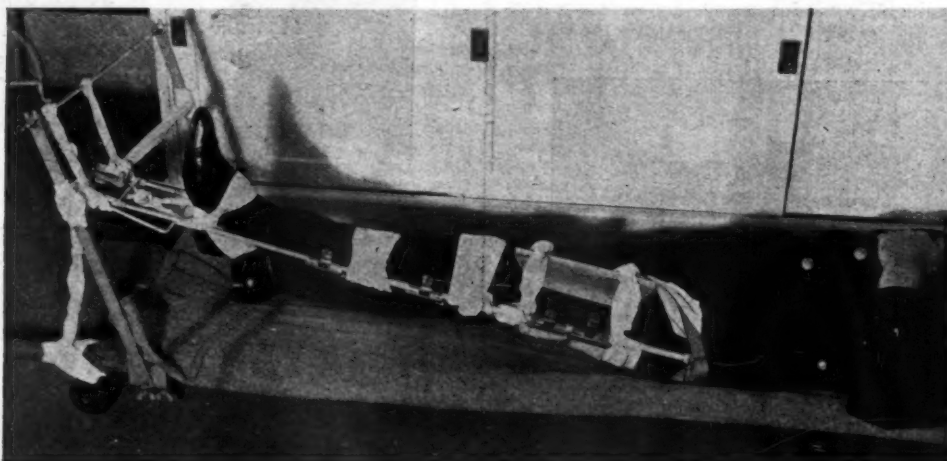


FIGURE XIII.

where he has fallen. No attempt should be made to move the patient one inch until the injured limb has been fixed and placed in a position of rest.

2. Every ambulance wagon should carry a canvas bag with the full equipment.

3. The personnel of each wagon must be trained in the use of the splint. Any ambulance man can learn its use in an hour, but periodic supervised practice is necessary.

from the hospital. Unless this provision is made the value of efficient first aid is utterly lost.

Summary.

1. A modification of the design of Hugh Owen Thomas's knee splint has been described.

2. The great benefit of this splint in the first aid treatment of injuries has been emphasized.

3. The writers are confident that, if every patient suffering from a fracture of the femur were treated

in the manner described, the surgeon would find his charge in good general condition, with the fragments in good line and length.

4. The patients would be spared much unnecessary suffering and the final results would be better than hitherto.

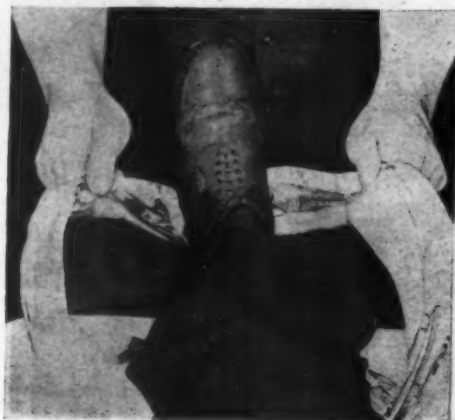


FIGURE XIV.

5. To those surgeons who desire to treat patients by H. O. Thomas's method, the possession of A. J. Thomas's complete outfit is commended.

6. The modified Thomas knee splint and the kit would be especially useful to the medical services of the navy and army.

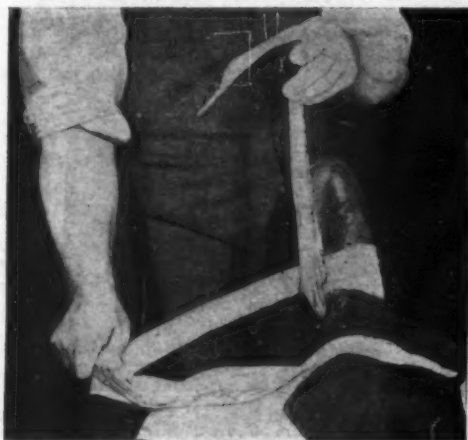


FIGURE XV.

Acknowledgements.

The writers desire to thank Mr. Musto for taking the photographs of Figures I to XIII, and Mr. Woodward-Smith for the photographs illustrating the bottle knot, and the competition team of the Sydney Municipal Council Division of the St. John Ambulance Brigade Overseas.

Reference.

¹ *The Bulletin of the American College of Surgeons*, Part II, March, 1934.



FIGURE XVI.



FIGURE XVII.

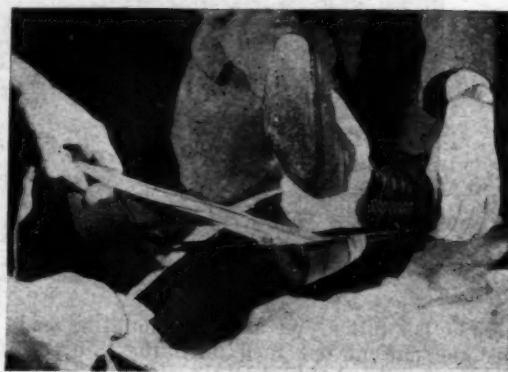


FIGURE XVIII.

Addenda.

I.

The following report has been received from the Medical Secretary of the New South Wales Branch of the British Medical Association:

In considering the merits of the modified Thomas splint as submitted for examination by Mr. Thomas, the subcommittee was guided by the following considerations.

A splint of this type should be: (a) readily adaptable to patients of various sizes; (b) furnished for continuous extension during transport; (c) portable; (d) easily assembled; (e) of simple construction and capable of manufacture from standard materials; (f) relatively inexpensive; (g) interchangeable with similar splints at hospitals to avoid the need of removal in casualty room; (h) of such a type as to allow of routine use in wards, if desired.

A brief description of the splint will show that it conforms to these requirements.

It is composed of four essential parts: (i) A distal portion, representing the part of the splint distal to the knee. This portion is threaded at its proximal ends, which have also a projecting stop to fit in a slot on the proximal portion. A small windlass attached to the distal end of this portion operates on a sliding cross bar by Bowden wire and is checked by a ratchet and pawl. Extension is maintained through this apparatus when the foot is attached to the cross bar. (ii), (iii) and (iv) Proximal portions of three sizes for large adults, medium-sized adults and children, all of which portions fit the distal portion and are connected to it by a thimble screwed on the threaded ends. The posterior half of the "ring" on each proximal portion is made of iron curved on the flat and is exceedingly well padded. The anterior portion of the ring is completed by a stout strap and buckle attached to the ends of the posterior portion. The curve of the iron may be readily altered so that one or other proximal portion will accurately fit limbs of any size and provide counter-extension against the *tuber ischii*. To insure still further that the splint fits the thigh accurately, a leather-covered wedge is provided. Slings of basil, aluminium gutter splints and large paper clips are useful accessories.

After witnessing the demonstration of assembly and application of this splint, we are satisfied that it conforms to the above requirements and we recommend that the Hospitals Commission be urged to make it part of the standard equipment of every casualty room. We also recommend that a similar suggestion be made to the various ambulance services, as it is only by cooperation between the ambulances and hospitals that such a splint will attain its maximum usefulness.

One obvious advantage of the universal use of this splint would be the facility with which an ambulance could regain its full equipment by leaving the splint on the patient and exchanging the remaining portion of the splint for the complete kit belonging to the hospital to which the patient was transported.

II.

To assure better wear at the junction, the thread and thumb-nut have been replaced by a bayonet lock. The half-head should be put into position for right or left limb before assembly. Any narrowing or widening of the half-circle should be made after assembly.

Reports of Cases.

DECOMPRESSION OF THE THORAX.

By H. O. LETHBRIDGE, M.B.E., M.B., Ch.M., F.R.A.C.S.,
Narrandera, New South Wales.

P.C., AGED seven, on the afternoon of March 13, 1936, was run over by a motor lorry. Bystanders saw a wheel go over his chest.

At 11.30 p.m. his condition was extremely bad. His pulse rate was 180, he was cyanosed, his heart was dilated and pushed to the right, and a complete left-sided pneumothorax was present. He was vomiting blood. He could

not be brought into hospital, owing to the state of the roads, until March 15. On arrival, although he had recovered from the shock, he was still very ill. His pulse was 165 and his colour pale, with lips bluish. An X ray examination revealed a large heart, which was displaced to the right, and a complete pneumothorax. There was no evidence of any blood in the pleural cavity. By means of the artificial pneumothorax apparatus 1,500 cubic centimetres of air were slowly drawn from the left side of the chest. The improvement in his condition was immediate and dramatic. His pulse rate dropped, his colour improved and he went to sleep before the operation was completed. A few days after the injury he was discharged, fit and well.

AGRANULOCYTOSIS.

By A. M. LANGAN, M.B., Ch.M. (Sydney),
Cairns.

AGRANULOCYTOSIS is so uncommon in Australia that the report of a case may be of interest.

The patient, M.B., was a married woman, aged forty-seven years.

Previous Medical History.—In 1915 she had had a cyst removed from the left ovary; in 1916 she had had her gall-bladder drained for gall-stones, and in 1921 she had had a ruptured ectopic pregnancy. She had had several attacks of malaria and for the past few years had been in chronic ill-health. She frequently took "Aspro" and powders of aspirin, phenacetin and caffeine; but there was no history of taking any of the amidopyrine preparations.

Present Illness.—Her present illness commenced on March 16, 1936, and she was admitted to the Cairns District Hospital under my care on March 25. She was in a very weak state and I have to rely on the relatives for an account of her symptoms for the nine days before I saw her. On March 16 she complained of a sore throat, and the following day the throat and mouth were so sore that she had difficulty in swallowing. She told her relatives that she had pains in the limbs and also in the abdomen, and she appeared to have a high temperature. The throat became progressively worse and her neck became swollen on both sides. On March 21 there was a sudden, profuse, blood-stained and pus-stained discharge from the throat, which gave her considerable relief. About this time she had severe pains in the back of the neck. On March 24 jaundice appeared, her urine became very dark, and her relatives decided to bring her to Cairns.

On admission to hospital on March 25 the two most noticeable symptoms were extreme fatigue and jaundice. She complained of feeling exhausted; I thought this was partly due to a long, rough trip of about thirty miles from her home to Cairns. She had a vesicular rash on both hands and a reddened, painful area on the right shoulder. Her fauces were covered with white patches and her temperature was 38.1° C. (100.6° F.).

The differential diagnosis was interesting, as she had suffered from gall-stones and malaria, and in this part of Queensland Well's disease also had to be excluded. However, a blood examination put the diagnosis beyond all doubt. The leucocytes numbered less than 500 per cubic millimetre; no polymorphonuclear cells were seen, and only an occasional lymphocyte was present. She was given "Campolon" (twenty cubic centimetres) intramuscularly, "Nucleinate de Soude" and "Vitamin B Complex". She continued in a state of extreme fatigue, with her temperature between 37.8° and 39.4° C. (100° and 103° F.), until March 30, when she died. By this time the reddened, painful area involved the whole of the upper part of the right arm; but there was no pus formation. A second blood examination made on the day of her death showed no change. No fusiform bacilli or spirochetes were isolated from the mouth, and no organisms were grown in an attempt at blood culture.

Reviews.

GYNÆCOLOGICAL DISEASES.

FROM America comes the eighth edition of "Diseases of Women", by H. T. Crossen and R. J. Crossen, and we consider that this is one of the best books on gynecology that has yet come out of the United States of America.¹ Within the last few years British works have caught up to and passed American text-books on this subject, but with the Crossens' work America again approaches, but does not gain, the lead. This book is written for the teacher and the student; it is not so convenient for reference by the practitioner, yet the whole book reflects the hand of the practical gynecologist.

Anatomy is scanty, physiology good, pathology excellent. The anatomy and physiology of each and every pelvic organ are considered together; then the pathology of all the pelvic organs is contained in one chapter. We confess that we prefer the pathology of an organ to be included in the chapter on the diseases of that organ. However, from the student's point of view, the authors' method may be better. The illustrations in this section are profuse and very instructive. The pathology of carcinoma of the cervix and body of the uterus is modern, and the theories of "pre-malignancy" and "healing erosion" in early cervical changes are presented with impartiality.

Throughout the book, but especially when dealing with malignant disease, the authors make strenuous efforts at classification. In many cases we do not agree with the subdivisions which they create.

The chapter dealing with methods of examination contains much that is elementary and is obviously designed for teaching purposes.

One of our main criticisms of the authors' methods, and indeed of all American methods, is the use of transuterine insufflation and uterosalpingography in the "office" and then allowing the patient to go home. Whilst admitting that these manoeuvres have a definite place in gynecological diagnosis, we feel very strongly that they should be carried out only in hospital after some days of treatment for the elimination of all possible sepsis.

The section dealing with gonorrhœa is good, and that dealing with *Trichomonas vaginalis* is modern and presents the sum of our knowledge up to date. Treatment of both conditions is somewhat briefly described.

In this book operative gynecology is only lightly touched on, and that only in certain conditions. Consequently prolapse is not discussed from its most fascinating angle—the method of attack. We were pleased to see a clear distinction drawn between rectocele and posterior colpocele.

Apparently the operation of trachelorrhaphy has been largely superseded by electrical conization. We confess to some alarm for the patients who go home after "office conization" for erosion. Surely some hemorrhage must occur.

Whilst admitting that numerous patients subjected to supravaginal hysterectomy afterwards die from cervical carcinoma, the authors perform total hysterectomy only in those cases in which the cervix is the site of a laceration or a severe chronic irritation, and in frank cases of carcinoma. Apparently they consider the higher mortality and morbidity of a total hysterectomy to be more dangerous than the risk of carcinoma in the cervical stump. With this we cannot agree. The mortality and morbidity of total hysterectomy performed under modern technique is very little, if at all, in excess of that of the subtotal operation. In our opinion the indications for subtotal as compared with total hysterectomy are very few indeed.

¹ "Diseases of Women", by H. S. Crossen, M.D., F.A.C.S., and R. J. Crossen, M.D.; Eighth Edition, entirely revised and reset; 1935. St. Louis: The C. V. Mosby Company. Super royal 8vo, pp. 1003, with 1658 illustrations. Price: \$10.00 net.

The authors have been converted to irradiation in the treatment of cervical carcinoma. We quote the following lines; they express an important point very well: "Effective irradiation treatment of cancer of the cervix is serious and hazardous surgical work. The shift of instruments from the knife to the more deeply penetrating radium does not lessen the surgical responsibility."

Immediate operation is advised in profuse intra-peritoneal hemorrhage from ruptured ectopic gestation. Apparently the "wait and see" method, which has many adherents in this country, is being gradually pushed into well merited obscurity. We also agree, however, "that in the absence of an experienced operator and suitable facilities operation had best be deferred".

The chapter on pelvic endometriosis is well done. The authors advise drainage in all cases of operation on extensive pelvic endometriosis, to obviate the peritonitis and intestinal paralysis which often follow. Uniformly good results have been achieved.

A chapter on after-treatment following abdominal section is sound, but we consider that a little less vigour might be appreciated by the patient without any harm to her condition.

The book is good. It is written for the education of the student by masters of the subject. The style is acceptable, the misprints are few, and though we occasionally stumbled over the numerous percentages scattered through the pages, we enjoyed the book.

The index is poor and occasionally definitely wrong—an unhappy ending.

TUMOURS OF THE BLADDER.

A book by Edwin Beer, on tumours of the urinary bladder, based on his experience of over six hundred cases, could hardly fail to be both of interest and of value.¹ He was one of the first to make use of transurethral diathermy in the treatment of these tumours, and he has since then exploited all the various methods of attack with the object of evolving the most satisfactory methods for the treatment of the various types of lesion. The greater part of the book is taken up with an account of his experiences and his present methods, each section being followed by a statistical summary of the results he has obtained.

After the introductory sections on history, pathology, symptoms and diagnosis, he describes and discusses in turn transurethral treatment, suprapubic operations, partial cystectomy, combinations of therapy, total cystectomy and radiation therapy. For carcinoma he strongly advocates partial cystectomy, preceded by electro-coagulation of the tumour, preferring this to the use of radium, which he employs when radical removal is out of the question. In selected cases he considers total cystectomy indicated. He has carried it out with cutaneous implantation of the ureters on seventeen occasions with four operative deaths, but he considers that the present mortality of cystectomy preceded by uretero-intestinal implantation is too great to justify the latter procedure.

He is not enthusiastic regarding the value of radium. He has the impression that deep X ray therapy may be of some value in the treatment of multiple recurrent papillomata, but has had no encouraging results with it in the treatment of malignant disease.

The book is not large, and is very readable and adequately illustrated. It is an important contribution to the literature on tumours of the bladder and should be carefully studied by all surgeons who undertake their treatment.

¹ "Tumours of the Urinary Bladder", by E. Beer, M.D., F.A.C.S.; 1935. London: Baillière, Tindall and Cox. Royal 8vo, pp. 173, with 52 illustrations. Price: 16s. net.

The Medical Journal of Australia

SATURDAY, MAY 16, 1936.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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VENEREAL DISEASE IN NEW SOUTH WALES.

VENEREAL diseases "exist today not because we are unable to control them on account of lack of knowledge, but because we have not dared to attempt to control them in a business-like manner". This statement appears in the report of the Director-General of Public Health of New South Wales for the year 1934, recently to hand; it is worth considering. During the year 1934 the number of venereal infections notified in New South Wales was 4,721. Of the 4,721 notifications received, 1,120 were for cases of syphilis (729 in males and 391 in females); 3,149 were for cases of gonorrhœa (2,539 in males and 610 in females). Other forms of venereal disease notified included soft chancre, gonococcal ophthalmia, venereal warts and gleet. Gleet, it is pointed out, is an unsatisfactory term; it is not used at the departmental clinic. Gleet is really an episode in the resolution of gonorrhœa and a careful examination generally reveals the nature of the infection. The opinion is expressed (no doubt the view is correct) that the term gleet is often loosely applied to a condition which in the majority of cases may be not only non-infective, but not of gonococcal origin at all.

As is well known, the medical practitioner who notifies a venereal infection does not include in his return the name and address of the patient. Only when the patient discontinues treatment before he (or she) is free from infection are the name and address notified to the department. The department then calls upon the patient to resume treatment. On paper, of course, the scheme seems ideal. The patient who fails to continue treatment until a cure is effected is liable to a penalty not exceeding twenty pounds. During 1934 the names and addresses of no less than 1,472 defaulters were sent to the department; this figure is 759 in excess of that for 1933. When letters were written to these 1,472 defaulters, 665 of the letters were returned unclaimed—the patients had either given wrong information or failed to notify change of address. The percentage of letters unclaimed was 45.17; in 1933 the percentage was 20.62, and in 1932 it was 40.03. During 1934 it was found possible to trace the defaulters more satisfactorily, and at the end of the year there were only 40 cases in which finality had not been reached, and the percentage of defaulters remaining in default was 47.89. This percentage is the lowest yet recorded. The position of the department is clearly very difficult. Apparently about forty persons should be prosecuted; actually during the year only three prosecutions were undertaken. No details of these are given. If it were known among "venereal circles" that prosecution for failure to attend for treatment was always undertaken, many more sufferers would give false information to the attending practitioner. How the Act could be altered to remedy this state of affairs is not clear. The current impression among medical practitioners is that the provisions of the Act might with advantage be more strictly enforced. In other words, many medical practitioners think that the department is rather lukewarm about the administration of the Act. The department would hold medical practitioners blameworthy; the following statement appears in the report:

It is regrettable that there are apparently still some medical practitioners who do not comply with the requirements of the Venereal Diseases Act. Unless the medical profession will co-operate more in the attempt to control

venereal disease, it will be impossible to make the desired progress, and these diseases, the spread of which is definitely preventible, will continue to flourish as in the past.

No doubt it would be difficult for the department to secure evidence of failure of medical practitioners to do their duty; if evidence were forthcoming, it would be well for the department to compel the practitioners concerned to fulfil the requirements of the Act. The accusation of lukewarmness would then be withdrawn.

The department is not satisfied with present conditions. It points out that the enforcement of severe penalties will seldom do any good and will tend to make people hide their infections or drive them to unqualified persons for treatment. In this regard the statement is made that an amendment of the *Medical Practitioners Act* to suppress the activities of unqualified persons is long overdue. With this we are in entire agreement. To the department the problem of venereal disease is one of prevention and control of infection; this should be the attitude of all medical practitioners. The department would deal with the problem by (a) educational propaganda; (b) requiring a certificate of health from both parties before marriage; (c) the routine blood examination of every pregnant woman for syphilis; (d) obtaining the name and address of the person accused of having conveyed infection and having him or her examined and brought under treatment if found infective; (e) the establishment of adequate facilities for prophylaxis and treatment. Most of these methods have been discussed in these pages; for the present we are content to lay most emphasis on the first and the last. The department thinks that little can be done unless the nations of the world combine and agree upon an efficient basic scheme for world-wide control of venereal disease and that minor modifications might be made to adapt the scheme to the national characteristics of the different nations. The optimistic view is expressed that in this way venereal disease could be satisfactorily controlled and that within three generations at most it would become a rare condition. Without doubt something could be accomplished by concerted action in Australia. The department issuing this report

suggests that a board consisting of one member from each State and from the Commonwealth Department of Health should meet at least twice in each year to confer on methods of administration and treatment. This brings us back to the statement that we are unable to control venereal diseases "because we have not dared to control them in a business-like manner". The Director-General of Public Health in New South Wales cannot bring about a world-wide movement to combat venereal diseases. If he attempts to cause combined action to be taken in Australia, we hope that he will be successful. His department is, according to his report, making good use of the machinery at its disposal as far as the treatment of patients is concerned; it is doubtful whether the same can be said of all the other States. The whole subject might be brought up before the Federal Health Council. This should spur the dilatory States into action; it would give the active States an incentive to renewed effort; it would also result in more propaganda, and propaganda is more useful in the prevention of venereal disease than in almost any other sphere.

Current Comment.

THE AUSTRALIAN X DISEASE AND LOUPING ILL.

AUSTRALIAN medical scientists have been interested in virus diseases for a number of years; Burnet's recent work, the contributions of numbers of workers on poliomyelitis, and the less recent but still important contributions of Cleland, Campbell and Bradley on the so-called X disease are sufficient proof of this. X disease, a form of encephalomyelitis, was so well investigated here that, even though the work was done nineteen years ago, when many modern methods were not available, the material then used is still capable of yielding useful information. J. R. Perdrau has been carrying out an examination of the old paraffin blocks and some formalinized specimens derived from fatal cases of this epidemic and from laboratory animals.¹ This material was made available by Professor Cleland, and his care in keeping the specimens and generosity in thus handing it over for further research have made possible some very interesting work. Though the tissues examined were not all ideal for histological examination, the modern methods were followed as far as possible.

Cleland and Campbell described a widespread meningeal infiltration with lymphocytes; cuffing

¹ *The Journal of Pathology and Bacteriology*, January, 1936.

with similar cells was observed round veins chiefly in the cerebral cortex. Collections of mononuclear cells were also observed in the grey matter, and small areas of necrosis and of hæmorrhage were found. Comparable lesions were demonstrated in laboratory animals. Perdrau confirms these findings, remarking that the areas in which destructive changes are seen sometimes show definite necrosis and sometimes not more than simple demyelination. The most significant changes he finds in the cerebellum; here the Purkinje cells are certainly affected, suggesting the changes seen in louping ill. This disease of sheep was shown to be due to a neurotropic virus some years after the work of Cleland and his associates, and it is very interesting that there appears to be a distinct and close resemblance between the histological picture of louping ill and that seen in X disease. The details of the minute structural affection are the province of the expert neuro-pathologist alone; here we are concerned with the deductions. Burnet has already pointed out that it is probable that this Australian epidemic may have been due to the virus of louping ill. Perdrau also comments upon the agreement as regards the animals susceptible and resistant, the possible association with sheep (though louping ill has not yet been described in Australia), the similarity in incubation period, and the curious ataxia observed by Cleland in infected monkeys. He confirms Cleland's contention that the disease was not a form of poliomyelitis, and ends by stating that the X disease was caused by a virus so closely resembling that of louping ill in sheep that the two cannot now be differentiated. It is not claimed that the Australian epidemic was due to human infection with the louping ill virus, and, indeed, there are a number of points in which the disease departed from the picture more recently seen in human cases of this animal disease.

In view of the great interest that is being taken in all virus diseases, and in particular those affecting the nervous system (which seem to be becoming more common during recent decades), it is important that an adequate examination of the brain and cord should be carried out in all cases of persons dying of aberrant affections of the nervous system.

KAPOSI'S VARICELLIFORM ERUPTION.

KAPOSI'S varicelliform eruption is a very curious and rare condition; its affinities are not thoroughly understood. Termed *pustulosis vacciniiformis* (or *varioloformis acuta*), the condition has not been definitely accepted as a separate entity among cutaneous eruptions, but it is held to be easily recognizable as a complication of infantile eczema. E. F. Corson and J. B. Ludy report three cases.¹

In the first case a strictly unilateral distribution of the lesions suggested *herpes zoster*. In this condition some umbilication may be observed. A similar bilateral lesion might have suggested variola.

The patient was a female, aged one year, who had suffered from facial eczema. Acute coryza and purulent rhinitis with pyrexia developed. About the same time an eruption of reddish spots appeared on the right side of the face. The spots rapidly became discrete pustules. Umbilicated pustules, uniform in size, were located on an inflamed, greatly swollen base. Edema almost closed the right eye. All lesions were apparently in the same stage of development. Confluence occurred and the pustules were almost entirely replaced by crusts. Umbilication practically disappeared. The lesions most nearly resembled vaccinia, but there was no history of contact with anyone recently vaccinated. The patient herself had not been vaccinated nor did she give a history of varicella. It was considered that perhaps the discharge from the purulent rhinitis had been smeared over the eczematous surface and had infected many foci at one time. But it seemed incredible that this could happen without the other cheek also being contaminated. The fever, with the uniform umbilicated outbreak, seemed more likely to have been a curious syndrome connected with the eczema. As cross-infection had probably occurred, it seemed futile to culture drying pustules.

The second case was identical in character with the first, but was bilateral. Umbilication of the pustules was pronounced. Variola was considered, but the child (aged eighteen months) had been successfully vaccinated three months previously. The child had not suffered from varicella, but an epidemic existed in the vicinity.

The last case was that of a lad of nine years. A provisional diagnosis of variola was made. Later a bullous type of *erythema multiforme* was suggested. The underlying condition of long standing gave a classical appearance of lichenoid eczema (neurodermatitis). Eosinophilia up to 16% was found on blood examination. The total white cells were 13,900 per cubic millimetre, with polymorphonuclear cells 32%, lymphocytes 55% and monocytes 17%. The boy had suffered from eczema with relapses since he was three months of age. He had been successfully vaccinated and had had varicella. He became acutely ill, with headache, vomiting, and a burning feeling in the skin. He resented being touched. A generalized pustular eruption appeared over the body, superimposed on a scaly erythematous base. The lesions were particularly noticeable on the forearms, but also on the face, neck and thighs. Many lesions were umbilicated. The cervical, axillary and inguinal glands were all enlarged. Pyrexia occurred.

The details given by Corson and Ludy are of clinical interest. As they point out, the chief value in recognizing the condition is in differentiating it from the "pox" group of exanthemata. In this respect the resemblance of its distribution to that of variola is of interest. It is difficult to determine its relationship to vaccinia, varicella and herpes. But the closeness of the relationship between varicella and *herpes zoster* has not been determined, though much work has been done on the subject.

¹The American Journal of Diseases of Children, December, 1935.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Studies on Crystalline Vitamin B₁.

MARTIN G. VORHAUS *et alii* (*The Journal of the American Medical Association*, November 16, 1935) have conducted a series of experiments relative to the nature and potentialities of the antineuritic vitamin B₁. They employed the pure crystalline material, of known molecular weight and formula. The normal adult human intake of the vitamin is said to be approximately one milligramme daily, the richest sources being bran, coats of grains, leguminous seeds and lean pork. Because true beri-beri responds to remarkably small quantities of vitamin B₁, it has been assumed erroneously that a similar situation exists with respect to all vitamin B₁ deficiencies. The minimum therapeutic dose that can be relied upon to abolish any accumulated deficit below normal storage capacity and to supply current needs is ten milligrammes daily. Adequate dosage is doubly important, because the therapeutic response is often the main diagnostic test of the more obscure types of vitamin deficiency. A diminished carbohydrate tolerance is a marked feature of B₁ avitaminosis; an attempt to establish the relation of vitamin B₁ to the clinical syndrome of *diabetes mellitus* was made by orally administering a daily dose of ten milligrammes for four consecutive weeks to eleven patients with proved diabetes according to present day standards. Six showed an increased utilization of carbohydrate, the remaining five did not. The results suggest that the action of the vitamin is a catalytic one. One hundred patients with peripheral neuritis of varying aetiology were next treated by the oral administration of vitamin B₁. The results are classified according to the causal factors, but, taking the series as a whole, only 8% failed to react favourably; 44% became entirely symptom-free and 48% were definitely improved. Among the 8% who showed no improvement were several patients with proved organic pathological conditions to explain their continued symptoms. With regard to those who were made symptom-free, and remained so, it is not illogical to assume that the illness of at least some of them was due directly to vitamin B₁ deficiency. The improvement noted in 48% of cases may have been due to the action of the vitamin, their failure to become completely well being due to the continued action of the original cause. A small series of eight cases of gastro-intestinal hypotonia, proved by radiography and associated with marked anorexia, abdominal pains and constipation, was next investigated. The combination of anorexia and gastro-intestinal

hypotonia has been noted in laboratory animals known to have a B₁ avitaminosis; so it was decided to study the effects of vitamin B₁ on this group. Six of the eight cases showed a complete restoration of normal bowel function, continuing after the cessation of medication; the remaining two were greatly improved. The authors' studies have led them to suggest that there are clinical states due to varying degrees of vitamin B₁ deficiency. According to the degree of avitaminosis, they tentatively suggest the following basis for further study, proceeding from the most severe and definite form: beri-beri, suspected or rudimentary beri-beri, polyneuritis of toxic origin, metabolic neuritis, disturbances of carbohydrate metabolism, and, lastly, unexplained anorexia and gastro-intestinal hypotonia.

The Anaemias.

G. R. MINOR (*The Journal of the American Medical Association*, October 12, 1935) discusses the anaemias of nutritional deficiency and their treatment. Lack of iron, of vitamin C or a substance contained in normal liver may give rise to dietary anaemias. The deficiency of this substance from normal liver causes usually macrocytic anaemia of the pernicious type; this substance is related to vitamin B. Normally muscle meat, eggs, rice polishings and yeast contain this dietary factor, which, in the presence of the gastric factor, prevents anaemia. Cancer of the stomach or total ablation may produce the same effect as absence of this gastric factor; it is sometimes absent in pregnancy. Sprue, coeliac disease, tropical macrocytic anaemias, prolonged diarrhoea and rare cases of intestinal stenosis and multiple anastomosis may be associated with anaemia due to lack of food containing the precursors of the substance or to failure in absorption. Deficiency of vitamin C (cevitamic acid) may lead to a normocytic or slightly macrocytic anaemia. Iron deficiency anaemias are hypochromic and microcytic; these occur from chronic blood loss, from inadequate diet or faulty absorption of iron. The last mentioned may depend on altered motility or secretion in the gastro-intestinal tract, improper mastication, diarrhoea and achlorhydria. In pregnancy inadequate diet, achlorhydria, altered digestion, and the presence of the fetus all play a rôle. Anaemia in women before the menopause, idiopathic microcytic anaemia and chlorosis, anaemias of infants and children and in chronic indigestion belong to this iron deficiency group. In "aplastic" anaemia and chronic benzene poisoning the bone marrow does not respond to treatment. In idiopathic hypochromic anaemia menorrhagia may occur and be relieved by adequate iron therapy. Parenteral liver therapy is 50 to 100 times as effective as liver given by mouth, and is necessary in those seriously ill or with spinal cord

lesions. The dose necessary may vary tenfold in different individuals; as a rule too little is given. Iron, up to six grammes of iron and ammonium citrate, and up to one gramme of ferrous sulphate, is necessary in the iron deficiency anaemias. In these cases, where a sharp distinction cannot be drawn, both liver and iron should be used in adequate doses.

Rheumatism and Gout.

FRIEDRICH GUDZENT (*Deutsche Medizinische Wochenschrift*, June 7, 1935) writes on the testing and treatment of rheumatism and gout with specific allergens. Two clinical observations originally directed his attention to the subject. A patient with gout had acute attacks when he took milk, but was very well while taking meat. Three patients with chronic articular rheumatism always felt worse after certain foods—one after fish, one after egg, and one after milk. Tests showed in each patient hypersensitiveness to the food substance concerned, and elimination of this food substance from the diet was followed by striking improvement. Further work led to the belief that in a certain group of rheumatics the clinical signs were an expression of an allergic reaction. In animals previously sensitized to a foreign protein the author has by the same protein provoked a clinical picture resembling human articular rheumatism. He considers that all processes (whether in joint, muscle, nerve, tendon or blood vessel) in all forms of acute and chronic articular and muscular rheumatism are a hyperergic reaction produced through hereditary or acquired hypersensitiveness to foreign protein. This protein may be derived from foodstuffs, from dead pathogenic and non-pathogenic microorganisms, from parasites, from moulds and yeasts, and probably from many other sources. In testing his patients he uses veal or beef, pork, mutton, rye, wheat, barley, herring, shell fish, milk, egg, potato, carrot, peas, mould, yeast, and suspensions of dead bacteria—staphylococci, streptococci, gonococci, *Bacillus pyocyaneus* and *Bacillus coli*. To simplify the testing he groups these for preliminary tests into the following groups: flesh, cereal, fish, milk and egg, vegetable, bacterial, and mould and yeast. He injects about 0.1 cubic centimetre into the skin of the inner surface of the forearm. A positive result is the production within thirty minutes of a wheal with pseudopodia and some erythema. The majority of patients react to one group only, and to one member only of that group. In all tests a control injection is made of normal saline solution. Of 300 rheumatic patients so tested, 279 gave a positive reaction and 21 no reaction. Of those who reacted, 34% were hypersensitive to one of the cereal group, 29.7% to the flesh-fish group, 16.7% to vegetables, 9% to bacteria, 7.6% to milk or egg, and 2% to the mould-yeast group. In

the light of the test, the first therapeutic procedure was to eliminate the offending allergen (or allergens) from the diet, if it were a foodstuff, and then, by intramuscular injection of this allergen, to desensitize the patient. The injections are given one, two or three times a week, beginning with a dose incapable of producing a reaction, and gradually increasing. It is a long process, requiring six to twelve weeks or even longer. The author has had only four cases of acute articular rheumatism and is anxious to ascertain whether recurrences will be prevented.

Electropyræxia.

CLARENCE A. NEYMANN (*Proceedings of the Royal Society of Medicine*, December, 1935) discusses the various uses of electropyræxia (the production of fever by electrical means) in therapeutics. He points out that the method of treating diseases by fever is very old, and he instances the use of setons and the deliberate infection with erysipelas that were employed in the nineteenth century. Besides *dementia paralytica* and other syphilitic diseases of the nervous system, the author employs electropyræxia in primary and secondary syphilis, Parkinsonism, multiple sclerosis, chorea, asthma, arthritis, gonorrhœa, and other diseases. He has for long held the view that fever *per se* is responsible for the benefit obtained by general paralytics subjected to malarial infection, and he believes that the results of electropyræxia have confirmed his view.

NEUROLOGY AND PSYCHIATRY.

Asthma and Epilepsy.

KATHLEEN TAYLOR AND J. TYLOR FOX (*The Lancet*, March 21, 1935) describe a case of asthma associated with epilepsy. There was no record of asthma or epilepsy in the family history. The patient commenced to suffer from bronchitis and asthma at the age of ten. The asthmatic paroxysms were accompanied by bronchitis and epilepsy. The fits occurred at the end of the asthmatic attacks. There was no evidence of tuberculosis. The child was admitted to Lingfield Epileptic Colony at the age of twelve years and ten months. For the first few months after admission the child was subject to persistent cough, with frequent paroxysms of dyspnoea at night; six of the paroxysms, which were more severe than the rest, terminated in an epileptic fit. The fit commenced when the patient was very cyanosed as a result of the asthmatic seizure. During the summer months the bronchitis subsided and the asthma and epilepsy no longer occurred. Treatment was directed solely to the alleviation of the thoracic condition, no drugs being administered to control the fits. The authors remark on the fact that asthma and epilepsy are regarded by many as

allergic in origin and point out that in some cases where the two coexist, the one seems to replace the other. But they know of no reported case in which the fits only occurred at the culmination of the asthmatic paroxysm. In conclusion, they remark that in cyanosis the cerebral cells are inadequately supplied with oxygen; "but other clinical conditions which cause cyanosis do not also cause epileptic fits".

Meningeal Lipomata in the Foramen Magnum.

WALTER MISCH (*The Journal of Neurology and Psychopathology*, October, 1935) reports two cases of meningeal lipoma in which the patient died and the tumour was found at autopsy. The author states that lipomata rarely develop in the meninges; they are more often found in the dorsal surface of the *corpus callosum*, the region of the *tuber cinereum* and the mid-brain. Reference is made to certain theories of origin and to other meningeal lipomata reported in the literature. Clinical and pathological details are presented of two cases of meningeal lipoma. The patients were females with long histories. In neither case was the correct diagnosis established during life. Both cases began with headache, vertigo and unsteadiness of gait. Papilloedema was not found.

Precocious Development of Neurosyphilis.

UDO J. WILE, DUNCAN O. POTH AND BURTON F. BARNEY (*The Journal of the American Medical Association*, October 26, 1935) publish the results of their investigation of the age of onset of symptoms in 436 cases of *dementia paralytica* and 378 cases of *tabes dorsalis*. They found that *dementia paralytica* occurred more frequently in females than did *tabes*. Precocity of onset was found more frequently in *dementia paralytica* than in *tabes*. In the young group the symptoms of *dementia paralytica* were more marked than in *tabes*. The mental changes noted particularly in the younger patients were the early onset of dysarthria, disorientation and euphoria, and at times irritability; but age did not seem to be a factor in the ultimate severity of the disease. The authors do not agree with other observers that the prognosis in younger patients is better than that in older patients.

Insulin Treatment of Drug Addiction.

M. P. CHEN, Y. L. CHENG AND R. S. LYMAN (*The Journal of Nervous and Mental Disease*, March, 1936) discuss the treatment of morphine addiction by the use of large doses of insulin. The morphine is suddenly cut off and injections of insulin are substituted, together with food and "Luminal". Although insulin has definite effects on the metabolism, the exact biochemical nature of which is not fully understood, the basic idea is to sub-

stitute craving for morphine by a craving for food. Most patients under the authors' care showed a short period of irritability and general psychomotor unrest, which was followed by relaxation and increased appetite, which led to increased weight. At this point psychotherapy is introduced. The patient's increased appetite is gradually turned to good account and the increased weight is accepted as a symbol of returning health. Occupational therapy follows, and with the concomitant mental rehabilitation the occupational therapy gives place to productive work in the community.

Crystal Formations in the Cerebro-Spinal Fluid.

K. ZEINER-HENRIKSEN (*The Journal of Neurology and Psychopathology*, October, 1935) contributes a paper on the crystal formations in the cerebro-spinal fluid, with many photographs illustrating the crystal characteristics of normal and pathological fluids. The content of organic ingredients in the cerebro-spinal fluid is poor, and conditions are favourable to the production of crystals when the fluid is dehydrated. Abnormalities in the inorganic or organic constituents of the spinal fluid will, of course, alter the crystal formation; but it should be remembered that the laws governing aggregate formations are not yet understood. The author outlines a simple method of obtaining these crystals and claims that it is possible to distinguish by this method a normal spinal fluid from that of a parietic; and, further, that the crystal formations change during malaria treatment and remission.

Alcohol in Catatonic Syndromes.

N. V. KANTOROVICH AND S. K. CONSTANTINOVICH (*The American Journal of Psychiatry*, November, 1935) report the details of treatment by alcohol of fifteen catatonic patients. Alcohol was in some cases given by mouth; but when this could not be accomplished on account of the patient's refusal to drink brandy, a 20% solution was given intravenously. The amount of alcohol was calculated to produce a mild state of intoxication. Brandy containing 40% of alcohol was given in amounts varying from 150 to 400 cubic centimetres to each patient. Intravenous injections were given at low pressure and over a period of 20 to 60 minutes, until signs of mental excitement were noticed. There were no untoward effects. Four patients showed no appreciable change in their behaviour; but in the other cases it would seem that alcohol interrupted the course of the stupor and sometimes caused a lasting cessation of mutism and negativism. The main value of the treatment lies in the fact that, even when only a temporary cessation of the stupor is produced, the physician is enabled to get into touch with the patient and become conversant with his mental conflicts.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held at the Anatomy Theatre, University of Adelaide, on February 27, 1936, Dr. D. R. W. COWAN, the President, in the chair.

Thoracic Surgery.

Dr. P. S. MESSENT read a paper entitled: "Some Aspects of Thoracic Surgery" (see page 670).

Dr. J. HAYWARD said that he was at a loss to know how to make an adequate presentation of the medical aspects of the subject in the ten minutes at his disposal, for he was convinced that to a large extent they in South Australia had a very insufficient appreciation of the scope and accomplishments of thoracic surgery and of the help it offered in the treatment of a number of important diseases.

Apart from improvements in technique, the rapid advance of thoracic surgery in recent years was largely due to greater accuracy in diagnosis, a sequel of modern X ray technique and interpretation, and to improved methods of anaesthesia; in neither of these departments were they far behind. But to a large extent there existed a muddle-headed prejudice against chest surgery on the ground of its being stunt surgery or still only in the experimental stage, and that good results could never be expected in the absence of the most elaborate imaginary proceedings concerned with team-work and technique, which were quite outside the experience and capabilities of Adelaide surgeons. Dr. Hayward was sure that this was not the case, and if in their complacency they in Adelaide found themselves twenty years or so behind the times, it behoved them to make a start on the business of catching up and removing a reproach which could not be levelled at their therapy in other departments of medicine.

Dr. Hayward proposed to deal briefly with the surgery of four diseases of the lungs: bronchiectasis, lung abscess, primary carcinoma and chronic pulmonary tuberculosis.

In the condition of bronchiectasis the following surgical procedures had been applied: bronchoscopic drainage, phrenectomy, pneumothorax and oleothorax, compression by pack or plombage, thoracoplasty, pneumotomy, cauter pneumectomy and partial or total pulmonary resection.

None of these procedures was applicable until non-operative measures had been tried for a reasonable period (two or three months) without improvement. The most valuable of them was postural drainage, if applied intelligently after the method proposed by Nelson, depending upon accurate localization of the dilated bronchi by lipiodol and X rays and the continuous or intermittent postural drainage of the bronchi towards the bifurcation of the trachea. The haphazard advice to "hang your head over the side of the bed" could not be expected to bring much in the way of results. Postural drainage alone, or aided by bronchoscopic aspiration and attention to upper respiratory infection when this was a factor, might succeed in mild cases in rendering the patient symptom-free—in perhaps 20% to 30% of cases. This procedure was recommended by Clerf and D. H. Ballou for mild cases associated with sinus infection; neither postural drainage nor bronchoscopy would in the strict sense cure many cases, but they could produce arrest of symptoms.

Although occasional good results were reported from measures designed to cause collapse of the bronchiectatic lobe, these were being rapidly abandoned. Beaumont, however, writing as late as last year, considered that a brilliant cure was likely if the collapse was done early before adhesions formed; and Tudor Edwards, also within the last year, had still advised thoracoplasty for unilateral cases, though he admitted that obliteration of dilated tubes and cavities did not occur. Ernest Lloyd (1935) agreed with the American observers that artificial pneumothorax,

phrenectomy and thoracoplasty were so disappointing in this condition that they should not be recommended.

Phrenectomy was certainly a bad procedure, and of it E. A. Graham concluded that it was "an operation which offers the individual patient only a small chance of improvement, which is usually only temporary, and a very definite chance of being made worse". In addition it might render the subsequent performance of other surgical procedures very much more dangerous and even impossible.

Artificial pneumothorax, oleothorax, thoracoplasty and compression by other means had all been tried and the results on the whole were bad. Graham concluded that pneumothorax was only seldom of any benefit and that very few cases of true bronchiectasis responded to collapse; and even though the collapse was almost complete, the pneumothorax usually served only to compress everything but the dilatations. Its few successes were in early cases.

Hedblom had introduced the operation of graded thoracoplasty, done in three to five stages; and, even though he restricted his cases to those with early peripheral cylindrical lesions, his results were not impressive. Of thirty-two patients reviewed in 1931, 21 were still alive, with reduction of sputum from 60% to 90%; of Sauerbruch's 49 patients, 17 only were improved.

The only curative treatment was either surgical removal or destruction of the diseased tissue, and pulmonary resection or cauter pneumectomy was suited to most types of the severe unilateral disease.

Lobectomy had made considerable progress in recent years, especially since the perfection of the one-stage technique; and the mortality in recent years had been reduced, in good hands, from 50% to 60% to about 10% to 15%. For children with bronchiectasis this would appear to be the operation of choice, as operations deforming the thoracic cage were definitely unsuitable. Tudor Edwards's latest results (1934-1935) showed an operative mortality, both early and late, of 14% in 57 cases of unilobular bronchiectasis treated by one-stage lobectomy.

In 1923, E. A. Graham had introduced the operation of cauter pneumectomy for those cases in which lobectomy had had to be abandoned on account of adhesions or for other reasons, and for those cases in which bronchiectasis was associated with multiple lung abscesses, or when a chronic lung abscess was associated with secondary bronchiectasis. The last mentioned were most unfavourable types of the disease; such patients were usually septic and severely ill; further, in this type thoracoplasty was usually fatal and lobectomy had a very high mortality. The operation was unsuited to those types associated with long and wide dilatations in the lower lobe; it gave its best results in those cases in which X ray examination revealed a grape or beaded appearance. By 1925 Graham had published reports of twenty cases. In 30% complete healing had resulted; 30% of patients were free of all symptoms but had a small bronchial fistula, 10% had improved greatly or were still improving, and there was a 20% mortality. By 1930 his operative mortality was 11% in 54 cases, and there were 66% of good results. The persistence of a small broncho-cutaneous fistula was not a matter of great moment. Graham did not allow the fistula resulting from his operation to heal under several months, and if necessary after a year or two he closed them surgically. These results seemed to Dr. Hayward very impressive, considering the severe and unfavourable type of disease that Graham tackled.

A discussion such as the present would be incomplete without some inquiry as to the fate of untreated and inadequately treated patients. This disease was usually said to be progressive, and this was probably true in the majority of cases. Of forty-nine patients treated medically and observed for three to six years by Roles and Todd at the Brompton Hospital, twenty-three were dead and nine were totally incapacitated at the time the review was made. They concluded that once the sputum became grossly infected the course of the disease was steadily down hill. However, in mild cases, without grossly infected sputum, the patients did not always deteriorate rapidly, and it was probably fair to say that neither the

duration of the disease nor the age at onset could always be held as particularly significant factors in the diagnosis. Mild degrees of bronchiectasis, associated with chronic upper respiratory infection and that following the bronchopneumonia of measles, whooping cough, influenza *et cetera*, might frequently become dry with adequate conservative treatment.

It was the opinion of Graham, Singer and Ballon that in those cases with a central trachea little or no fever and no atelectasis, the prognosis was not nearly so bad as in those in which the dilatations were associated with atelectasis and fever. The most unfavourable types in children were those associated with much fibrosis and progressive displacement of the mediastinum to the affected side. The course was then steadily down hill and death might be expected to occur within a few years from pneumonia, multiple abscesses or both, or their complications. In the adult the position was similar, although bronchiectasis was only rarely associated with extreme mediastinal displacement in the absence of tuberculosis or bronchial stenosis from foreign bodies or malignant disease, and expression of opinion as to the outcome of the surgically untreated disease might be very difficult. The severer types, of course, usually ended by one of the complications, such as empyema, brain abscess or amyloid disease. In summary, and speaking of lobectomy for this condition, Graham, Singer and Ballon concluded that although recent improvements in technique had greatly lowered the mortality, the operation still remained, even in the best of hands, one of the most serious in the surgical repertoire. Taking only the most recent and favourable figures (1932), a patient with bronchiectasis who submitted to lobectomy ran about 15% to 20% risk of dying because of the operation and had about a 65% chance of a thoroughly satisfactory result with solid healing of the wound. Whether those present were to regard the results of surgical treatment of this disease as good or indifferent would appear to depend on their opinion of its natural malignancy.

The surgical treatment of lung abscess, acute or chronic, should rarely if ever be undertaken without about three months' trial of conservative treatment. Rest in bed and postural drainage were naturally more successful in acute than in chronic abscess, and for hilar rather than for peripheral abscess. During this time bronchoscopic drainage might be tried and was likely to assist where the abscess was not placed peripherally. Other adjuvants to treatment which might be tried during this stage were inhalations, vaccines, intravenous injections of arsenicals *et cetera*. Spontaneous cure was, of course, more likely to occur with hilar and central abscesses, and, including all cases except those due to malignant disease, accounted for about 25% to 30% of cures.

Artificial pneumothorax should not be embarked upon except with the greatest caution. The danger in peripheral abscess was extremely great, though good results might sometimes be obtained with central or hilar abscesses, if localization was certain. Thoracoplasty had been used by some, but the operative mortality alone was usually in the region of 40%, and the general opinion was that it was never indicated. Phrenectomy also should not be employed; it impaired cough and spontaneous drainage and had only very rarely been of benefit.

External drainage (pneumotomy) was indicated for the more peripherally placed chronic abscesses; for acute abscesses it was very dangerous; localization, of course, had to be perfect and newgrowth as a cause had to be excluded. It was then the operation of choice, though the mortality was high—in the region of 25% to 30%—and the cures only in the region of 40% to 50%.

Lobectomy had an extremely high mortality and was probably never justified in the treatment of this condition, in view of the far lower mortality and relatively satisfactory results of cauterly pneumectomy, which was the operation of choice for those patients unsuited for simple pneumectomy.

The surgical treatment of carcinoma of the lung was an extremely difficult problem, and the expectation of life in primary carcinoma was notoriously difficult to decide.

In this connexion there were two factors of the greatest importance: (i) the position of the tumour and (ii) its degree of differentiation. It had been observed that when the tumour was primarily in the major bronchus the patient lived almost four times as long as when it was placed peripherally. In a large series of cases Ballon had shown that when the tumour was in sight of the bronchoscope the patient's life averaged thirty-four months; when it was out of sight, 13.7 months. A well differentiated tumour survived about twice as long as the undifferentiated and was about twice as common in a major bronchus as at the periphery. The undifferentiated tumour was about twice as common at the periphery as in a major bronchus. Hence the obtaining of a portion of tumour through the bronchoscope was of the greatest value as an indication of what one might hope for from a surgical attack. In the vast majority of cases carcinoma of the lung was radio-resistant and deep X ray therapy would produce no prolongation of life. As far as Dr. Hayward knew, there was no record of a single cure resulting from deep X ray therapy alone, while, on the contrary, it occasionally produced rapid dissemination and early death. Bronchoscopic removal and implantation of radon seeds had occasionally produced good results: Carlson and Ballon reported six successful cases from the literature prior to 1933. Dr. Hayward had seen a patient at the Brompton Hospital who had kept well for three years before recurrence and a second implantation; he was then progressing again.

Exploratory thoracotomy and direct implantation of radium had been attempted for peripheral tumours, but the results so far had not been favourable, as might be expected. Extirpation offered the best chance if there was any possibility of complete removal. Lobectomy was less likely to effect this than pneumectomy, especially as the most favourable tumours pathologically were situated so close to the division of the main bronchus that it was usually not possible to save the other divisions of the bronchus. There were six cases recorded previous to 1933 in which the patient had survived this operation for malignant disease for more than one year. At the present time there were probably a good many more. Tudor Edwards had reported last year that he had three survivals, for periods of five, six and seven years, after lobectomy for primary carcinoma.

In comparison with other parts of the world the surgical treatment of pulmonary tuberculosis appeared to have been almost neglected in South Australia, where the general attitude of mind was that surgery was applicable only as a last resort in the far advanced chronic case. This was certainly not the case, and the surgical treatment of these cases and its inevitable failures could bring only discredit on most valuable operations. While not advocating surgical measures as a panacea in the treatment of tuberculosis, Dr. Hayward held that there was no doubt that in individual suitable cases it became a life-saving measure and was frequently the only means of restoring a number of patients with even small areas of disease to working capacity.

Phrenectomy, scalinotomy and apicolysis were relatively unimportant procedures compared with internal pneumolysis and thoracoplasty, about which Dr. Hayward would like to say something. The too common practice of continuing a useless artificial pneumothorax over prolonged periods, denying the patient the advantage of other operative procedures, was being universally condemned; but they had not yet advanced from this stage. Attempt to stretch adhesions by raised intrapleural pressures was very generally being abandoned as dangerous and as the most fruitful source of the one real danger of artificial pneumothorax therapy—pyothorax. Very frequently, before a satisfactory collapse occurred, this complication or a spread to the other lung added to the difficulties of the case. In general, when the pneumothorax was unsatisfactory after six months, methods of securing a better collapse should be considered at once.

In 1913 Jacobæus had introduced the operation of adhesion section by galvano-cautery, now largely superseded by the electro-surgical method of Ralph Matson.

Matson gave the following indications for internal pneumolysis: the prevention by adhesions of adequate collapse after trial of artificial pneumothorax for four to six months, a reasonable prospect of recovery with improved collapse, a pneumothorax cavity of sufficient size in which to operate, and adhesions of a suitable type for section. The last-mentioned could usually be determined only by thoracoscopy, in itself harmless. The mere presence of adhesions was, of course, not an indication for their division, but organization of adhesions causing premature expansion should be prevented early by their section. Operation was contraindicated during the formation of an acute pleural exudate or in the presence of acute pyothorax; contralateral disease or simple pleural exudate was not a contraindication. The complications of this procedure were mainly serous, purulent or hæmorrhagic exudation. These three types of exudation had occurred respectively in 30%, 20% and 12% of 200 cases reported by Matson, and in 25%, 8% and 1% of 110 operations performed by F. G. Chandler and reported last year. In Matson's 200 cases two-thirds of the results were good and clinically successful.

Thoracoplasty was certainly an operation which did not occupy the place in South Australia which it should, for it had long since passed from among the surgical procedures of doubtful value. This was definitely not an operation for the late far advanced cases. Chronic cases and poor operative risks should be excluded. A series of depressing failures made it almost impossible to get those who could be benefited to submit to the operation.

The indications for this operation were essentially the same as those for artificial pneumothorax, with the exception of more rigid criteria concerning the sound lung and demanding the absence of active or recently active tuberculous disease either in the lungs or in other parts of the body. The patient should first have demonstrated his ability to help himself as indicated by the clinical course of his disease and by the X ray findings, such as displacement of the trachea and mediastinum, narrowed intercostal spaces, elevation of the diaphragm or interlobar septum (if on the right side). The indication *par excellence* was the presence of unilateral disease with a cavity discharging tubercle bacilli, uninfluenced by conservative treatment and after failure to establish an artificial pneumothorax. It was also indicated to close a tuberculous pyothorax cavity after the failure of other measures, such as aspiration, wash-outs and drainage.

In the treatment of parenchymal disease, absence of fibrosis and recent activity in either lung or elsewhere in the body were absolute contraindications. Laryngeal tuberculosis was not a contraindication *per se*, unless it was progressing; it had been well described as the "mirror of the lungs". The operation was rarely to be considered in patients over fifty years of age and in those running more than a mild temperature, and only seldom when the symptoms (not the treatment) had been in existence for less than two years.

From the technical point of view the one-stage operation had proved to be about twice as dangerous as the two-stage operation, and the present tendency was to do the operation in more numerous stages; three or four were now common at intervals of about ten to fourteen days. Rib regeneration, which had been observed to occur as early as three weeks, provided some difficulty, but it was probable that this could be delayed to about ten weeks at the earliest by painting the periosteum of the resected ribs with 10% formalin or Zenker's solution, as advocated by Dolley. The operation, of course, was essentially extrapleural, and tearing of the pleura in resection of the ribs should not occur with adequate exposure and careful stripping. An infected wound was evidence of faulty technique, and many surgeons now closed the wound without drainage.

It was being realized more and more within recent years that sacrifice of large amounts of good lung tissue in such operative collapse was frequently unnecessary, and the operation of partial thoracoplasty held probably the greatest hope of all operative procedures in this disease. The resection of ribs required to be much

greater—usually the whole of the first two ribs from the transverse processes to their costal cartilages, and extensive resection of one, two or three more. When the sixth rib was removed, removal of the lower end of the scapula allowed it free movement and added more even pressure to the collapsed lung. If necessary, the limited operation could be done on both sides, though comparatively this had not been very often attempted. It was first done successfully, Dr. Hayward believed, by Duff Allen, of St. Louis, and offered almost the only hope for the patient with chronic fibro-caseous disease with cavitation at both apices, though frequently one side would greatly improve after operation on the other, from relaxation of tension; but usually severe dislocation of the trachea occurred, which might be sufficient to produce chronic dyspnoea. Semb, in Scandinavia, had recently amplified the procedure of partial thoracoplasty by what he called *extrafascial apicolysis*, involving the division of all fibrous and muscular structures between the neck and dome of the pleura; but even with this procedure and secondary operation on the regenerated ribs and removal of the transverse processes it was not always possible to insure the closure of a cavity. However, such failures were rare.

The mortality in 2,642 cases of thoracoplasty collected by Graham, Singer and Ballou up to 1930, averaged 13.3%, but in recent years this too had been greatly reduced. Tudor Edwards's latest series of 101 thoracoplasties had a mortality of 4.8%, and the present operative mortality in most clinics was between 5% and 8%, varying with the strictness of the indications observed for operability and the experience of the physicians and surgeons concerned. Good results might be expected in about 65% to 70% of cases (apparent cures 40%, great improvement 25%). This, considering the usual fate of patients possessing a cavity discharging tubercle bacilli, might be regarded as very good. Of 236 patients submitted to partial thoracoplasty, records of whom were collected by Hedblom, 87.2% survived the operation with benefit and 12.8% died, while the results of some individual operators were extraordinarily good. Coryllos, in twenty-six consecutive apical thoracoplasties, had lost no patients as a result of the operation, and Vinsella in 1934 reported that he had operated on ten patients, of whom none had died after two years. Dolley's series of 120 apical thoracoplasties had a total mortality (early and late) of 7.5%, 98 of the patients becoming well, with sputum free of tubercle bacilli.

The complication most greatly to be feared was a spread of the tuberculous process, which accounted for 30% to 40% of all operative deaths and over 50% of the deaths occurring in the first three weeks and more than 75% of those occurring in the first year. The acute oedema of the lungs described post-operatively was almost certainly an acute tuberculous pneumonia and only rarely a vascular accident; it was best treated by continuous administration of oxygen, preferably by means of an oxygen tent.

Apart from the actual operative technique employed, good results depended very largely on good pre-operative and post-operative management. Pre-operative treatment should include blood transfusion, if necessary, attention to cardio-vascular tone, postural drainage designed to empty cavities and keep them as dry as possible for a few days before operation, and possibly reduction of the patient's allergy by a course of tuberculin in the months preceding operation might be a factor in reducing the incidence of acute post-operative pneumonic reactions. Although operations on tuberculous subjects were at any time risky and not to be undertaken lightly, yet it was only fair that surgical aid should not be withheld from those patients who could benefit from it, and not applied recklessly as a desperate remedy.

There were many among the tuberculous population for whom surgery offered their only remaining chance of recovery, and a good chance. If they were denied its help, there was definitely nothing ahead of them but early extinction. These people were wholly at the mercy of their physicians.

DR. E. A. MATISON said that in the pre-surgical treatment of bronchiectasis bronchoscopic aspiration should be given

a far more important place than it was given at the present time. In his experience at the Children's Hospital the secretion aspirated through the bronchoscope was in many cases of such great viscosity that when the test tube into which the secretion was aspirated was inverted, the secretion did not make the least attempt to escape from the tube. This made him feel that in cases of this type postural drainage was of no use whatever and it should be practised only in conjunction with bronchoscopic aspiration, and, when this failed to bring relief to the patient, then surgical treatment should be considered.

Dr. CHRIS SANGSTER said that he agreed with the plea that had been made for the trial treatment of bronchiectasis by bronchoscopic suction, especially in those cases with a considerable amount of foul purulent sputum.

By this method, carried out, say, every week, every fortnight or every three weeks, varying with the individual case, the amount of sputum could be kept considerably reduced in amount, with consequent benefit to the patient himself and his associates.

Dr. Sangster said that Scott-Pinchin and Norlock, working in their bronchoscopic clinic at the City of London Hospital, Victoria Park, London, used this method in a large series of cases with good results. After suction had been carried out, in many cases they instilled 15 to 20 cubic centimetres of a 10% solution of "Gomenol" in olive oil into the dilated bronchi which had harboured the foul sputum. By means of catheters passed via the bronchoscope they were able to instill the solution directly into the affected tubes.

Dr. Sangster said that a simpler method that could be used to diminish the quantity of sputum and to make it less offensive was to put into the bronchi the same amount of the "Gomenol" and olive oil solution by way of an intratracheal catheter, passed under direct vision by the laryngoscopic mirror via the nose. It was done without any immediate antecedent aspiration. This could be carried out with little inconvenience to the patient after preliminary cocaine local anaesthesia.

Patients should be instructed to make every effort to avoid coughing up the "Gomenol" and olive oil for some time afterwards, thereby facilitating its deodorizing and what antiseptic action it had. This procedure might be carried out with the same frequency as bronchoscopic drainage.

In reference to lung abscess, Scott-Pinchin and Norlock, after a short time of conservative treatment, often employed bronchoscopic suction for these cases. Dr. Sangster said that some early cases of lung abscess, when the lung was in a state of pneumonitis and before actual destruction of tissue had taken place, might be aborted in this way. Very little purulent material might have been aspirated, but after catheterization there appeared to be a freer exit for any purulent secretion that formed. In frank lung abscess with much foetid sputum great benefit often resulted from this form of therapy.

In reference to anaesthesia in lobectomy for bronchiectasis, anaesthesia via an endotracheal catheter appeared to be the method of choice at operation, and much foul secretion might be squeezed up from the affected lung into the main bronchi and trachea. This might have found its way into the sound lung, there producing two effects: (i) diminished oxygenation during anaesthesia with resulting cyanosis, (ii) post-operative bronchopneumonia.

With an endotracheal catheter in place a smaller catheter could be passed via the endotracheal catheter, and with a suction apparatus connected up with the smaller catheter the purulent secretion, if the necessity arose, could be conveniently aspirated at the time of operation. For these reasons Dr. Sangster considered endotracheal anaesthesia the form of anaesthesia of choice.

Dr. ALLAN LAMPHEE prefaced his remarks with the following statement by Howe in "Recent Advances in Anaesthesia":

In thoracic surgery a type of anaesthesia is required which should have the following characteristics.

(1) In the first place it must not have a depressant effect upon the body as a whole, even after prolonged administration.

(2) It must have no harmful effect upon normal lung tissue or diseased lung tissue, nor must it increase the secretion of the respiratory passages.

(3) It must not abolish the coughing reflex, so that fluids in the air passages can be evacuated both during and immediately after operation.

(4) It must be followed by rapid recovery without undue after effects.

(5) It must enable one or both pleural cavities to be opened without danger, if necessary.

(6) It must insure adequate oxygenation of the blood.

Of course, all of these criteria were not necessary in every case, but Dr. Lamphee said that they were all necessary in cases of lobectomy for bronchiectasis or malignant disease and also for thoracoplasty.

He said that in dealing with thoracoplasty there were several difficulties with which the anaesthetist had to contend. In the first place the position with the patient lying on his face was a difficult one, and also the very nature of the operation threw one lung completely out of action, which meant that a high percentage of oxygen had to be given. The operation was usually performed in cases of bronchiectasis, pulmonary tuberculosis or chronic empyema, and he considered that undoubtedly the best anaesthetic was nitrous oxide and oxygen. Dr. Lamphee said that he had not found it necessary to use the endotracheal method. He used to think that ethylene was better than nitrous oxide, but since the introduction of "Evipan sodium" he thought that nitrous oxide was just as satisfactory, because the "Evipan" allowed a much higher percentage of oxygen to be given.

On one occasion he had had some anxiety owing to a "flapping mediastinum" which occurred during a thoracoplasty, but this could be remedied by the surgeon's keeping the collapsed lung still by means of packs.

With regard to lobectomy, Dr. Lamphee said that he had had no personal experience of anaesthesia in this operation, but he regarded some form of gas anaesthetic as essential. If a cautery were to be used, of course, ethylene would be out of the question. In some of these cases it might be considered advisable to shut off the diseased lung altogether. This could be done by an intrabronchially administered anaesthetic in which the main bronchus leading to the diseased lung was blocked by passing a tube along it and distending a rubber cuff with air. In this way the gas was conveyed only to the sound lung and there was no danger of its being swamped by blood or other fluid from the site of the operation.

With regard to thoracotomy, Dr. Lamphee said that this operation varied in severity from drainage of a simple acute empyema to removal of many ribs and exposure of the whole lung, such as was necessary in some cases of carcinoma of the oesophagus. Drainage of a simple empyema could be carried out quite satisfactorily by using a local anaesthetic only. In the injection, however, care had to be taken to make the injection well above and below the site of the rib to be removed, owing to the extensive overlapping of the nerve supply.

If a local anaesthetic was not used, either ethylene or nitrous oxide was preferable to ether if the patient was at all sick or if the lung condition had not had time to clear up completely. Patients who were comparatively fit and in whom the lung condition had cleared up would stand quite well a short period of anaesthesia with ether given by the open method.

Dr. Lamphee said that in the more extensive thoracotomies it was often advisable to do an artificial pneumothorax on the side to be operated upon some days beforehand. This allowed the mediastinum time to adjust itself, and there was not the danger of the severe shock which was apt to occur if the whole of one side of the chest was suddenly made to collapse, as in an extensive thoracotomy. Another way of obviating this was by a

positive pressure method of administering the anæsthetic. This could easily be done by the endotracheal method, either ether or gas being used, according to the indication of the particular case, and a double airway being used with a spring expiratory valve.

These remarks applied particularly to cases in which both pleural cavities had to be opened simultaneously. In these cases it was essential to have a positive intrapulmonary pressure.

Dr. Lamphee said that with regard to hydatid disease of the lung and abscess of the lung, some of the patients did quite well with an ordinary ether anæsthetic, but for others he thought that a gas anæsthetic was preferable. Some anæsthetists would prefer to give an anæsthetic by the endotracheal method, especially if it was desired to keep the lung fully expanded against the chest wall; but in many cases this had already been insured by the surgeon by a preliminary operation, and the fibrotic wall surrounding the abscess or cyst was very thin or friable.

Hare Lip.

Dr. L. A. WILSON showed a baby, aged six months, on whom he had operated for a double hare lip. He demonstrated a modified Logan's bow, which was being used successfully to ease tension in all cases of hare lip. The use of the bow was made much easier if the pins to which the strapping was fixed were on the upper bar instead of the lower one, as shown in diagrams of the original bow.

Plastic Surgery.

SIR HENRY NEWLAND demonstrated the results of several plastic operations.

The first case was one of rhinoplasty and repair of the right cheek and lower eyelid, in which joint use had been made of a forehead flap and a tubed pedicle flap from the right shoulder. The final operation, disposing of the tubed pedicle, remained to be done. Sir Henry Newland said that he hoped later on to publish the case with illustrations.

The second case was one in which great facial deformity had resulted from a burn caused by methylated spirit. The dense keloid scar on the neck was excised and a flap was brought down from the forehead, visor-like, to repair the loss. A "whole-thickness" skin graft was applied to the forehead. The case illustrated, like others shown that evening, how hairless "whole-thickness" grafts, when applied to the vascular pericranium, tended to grow hairs which might attain inches in length.

In the third case excision of the right eye and partial excision of the orbit, nose and right cheek had been carried out for rodent ulcer. A large forehead flap was used to make good the loss and to cover the orbit. No recurrence had taken place after five years.

The fourth case was one of rhinoplasty after the removal of the nose for epithelioma. A rodent ulcer had at the same time existed on the forehead. This was excised and a "whole-thickness" skin graft was applied. The rhinoplasty was faulty in that the columella and lobule of the nose were too small.

Popliteal Aneurysm.

Sir Henry Newland showed a specimen of a popliteal aneurysm removed from a woman aged seventy years. The aneurysm had existed for five years. As gangrene threatened the foot it was thought that removal of the sac without the use of a tourniquet might obviate it. Such had not been the case, for the toes had died and amputation above the knee had therefore been performed.

Malignant Papilloma of the Bladder.

Sir Henry Newland also showed a specimen of extensive malignant papilloma of the bladder. Complete cystectomy, preceded by cutaneous implantation of the ureters, had been performed. He stated that it was seldom that complete cystectomy was justified. In the case in question intestinal implantation of the ureters was contraindicated,

as the bladder was distended to the level of the umbilicus. Catheter drainage *per urethram* would almost certainly have failed, as the diffuse papillomatous growth revealed by cystoscopy would have blocked the eye of the catheter and interfered with the renal decompression. A suprapubic cystotomy was therefore performed. Subsequently the right and left ureters were transplanted to the inguino-lumbar region. Much to Sir Henry Newland's discomfort, and not less to that of the patient, urine continued to pass through the suprapubic wound, which gradually healed with a return of frequent and painful scanty micturition. It was obvious that a third ureter existed and probably connected with the left, because it was noticed after the transplantation operation that the left ureter for a day or two did not discharge urine. An intravenous pyelogram afforded no information. After the suprapubic wound had healed the operation of prostatectomy was advised, as it was felt that only by the removal of both organs could complete excision of the extensive growth be insured. The perineal part of the operation, so far as it went, was easily carried out. The membranous urethra was divided, but unfortunately the pubo-prostatic ligaments and fascial connexions of the prostate were not severed. This made difficult and prolonged the suprapubic part of the operation. In its performance the bladder tore away from the prostate, the wall having been softened by the growth. A warning from the anæsthetist that the patient might not leave the table alive led to the prostate being left in place. The patient speedily recovered, and some weeks later survived an operation for intestinal obstruction due to strangulation of the small intestine. A fibrosed orifice, the result of an unclosed tear in the peritoneum which had occurred in separating the left ureter during the operation for its implantation, caused complete obstruction of the prolapsed coils of small intestine.

NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Prior, Allen Percival, M.B., B.S., 1935 (Univ. Sydney), Royal North Shore Hospital of Sydney, St. Leonards.

Spence, Lockhart James, M.B., Ch.M., 1914 (Edinburgh), Bolton Street, Newcastle.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Carroll, Arthur James, M.B., B.S., 1934 (Univ. Melbourne), Saint Vincent's Hospital, Fitzroy, N.6.

Hurt, John Harcourt, M.B., B.S., 1935 (Univ. Melbourne), 325, Dandenong Road, Prahran, S.1.

Trood, Christina Rosalind, M.B., B.S., 1935 (Univ. Melbourne), c.o. British Medical Association, Tavistock Square, London, W.C.1.

Villiers, Alice Gwynne, M.B., B.S., 1933 (Univ. Melbourne), Austin Hospital, Heidelberg.

Xipell, Francis, M.D., 1935 (Genova), 142, Mont Albert Road, Canterbury, E.7.

Public Health.

DIPHTHERIA.

THE following notice is published at the request of the Director-General of Public Health for New South Wales.

IMMUNIZATION AGAINST DIPHTHERIA BY MEANS OF ANATOXIN.

Technique of Immunization.

Apparatus.—Diluted anatoxin for skin test, anatoxin for immunizing injections; solution of mercuric biniodide in spirit (1:1,000); sterile swabs; methylated spirit; sterile water; one cubic centimetre hypodermic syringe, or tuberculin syringe; hypodermic needles (rustless steel, Number 20 gauge); bowls; sterilizer; dressing forceps.

A complete record should be kept showing name, age, sex, date, and result of sensitivity test, dates of immunizing injections, and batch number of anatoxin used.

The syringe, needles and bowls *et cetera* having been sterilized, the operator cleanses hands and forearms by scrubbing with germicidal soap followed by biniodide solution.

The ampoules are sterilized by immersion for ten minutes in spirit and washing in sterile water before being opened aseptically.

The skin of the patient's forearm is cleansed by rubbing with a swab soaked in biniodide solution. The skin is then allowed to dry.

A sterile needle is fitted to the syringe with sterile forceps.

A good light is essential.

As a certain proportion of children, especially among those of school age, show some sensitivity to anatoxin, it is advisable to apply a preliminary test for sensitivity in all individuals over three years of age.

Sensitivity Test.—The sensitivity test consists of the intracutaneous injection into the skin of the forearm of one-fifth of a cubic centimetre of diluted anatoxin (anatoxin diluted 1:20 is supplied for this purpose with each package of anatoxin). The reaction, if present, develops usually within 24 to 48 hours and shows itself as a pinkish area from half to one inch in diameter around the site of the test injection. It is best read at the end of 48 hours. This reaction occurs in about 5% of school children, but is rare in children of pre-school age.

Of the children showing the sensitivity reaction, it is estimated that the majority have some immunity. Those who are not immune can be detected by the Schick reaction, but this is not absolutely necessary, as all those found sensitive can be given modified doses of anatoxin.

Immunizing Injections.—(a) In children showing no sensitivity, half a cubic centimetre of anatoxin is injected subcutaneously into the upper arm on the day that the sensitivity test is read, that is, 48 hours after the test injection, if given. Each child is then given a slip showing the date and time it is to attend for the second injection.

After an interval of three to four weeks a second subcutaneous injection of anatoxin is given; this time the dose is one cubic centimetre.

After a further interval of three to four weeks a third injection of anatoxin (dose one cubic centimetre) is given. In some cases two injections will suffice to produce immunity, but three are advisable.

The resulting immunity develops during the subsequent three to six months (in some cases more rapidly) and is apparently lifelong in duration.

The dosage above recommended is used at all ages.

(b) The children showing a sensitivity reaction may be treated by modified doses.

In those showing a reaction, one-tenth cubic centimetre or less may be given at the usual intervals.

Contraindications.—Children subject to bronchial asthma, children obviously ill or showing signs of oncoming illness, and those suffering from septic conditions, boils *et cetera* are not suitable subjects for immunization.

Immunization is not recommended in children under the age of twelve months.

E. SYDNEY MORRIS,
Director-General of Public Health.

Sydney, 1936.

Correspondence.

BLISS FOLLOWING CURETTAGE.

SIR: An Australian hospital now cherishes amongst its archives the joyous eulogy subjoined.

The Superintendent,
— Hospital.

Dear Sir,

Would you allow me to thank you for the wonderful treatment I have received in your hospital? I don't know who was the clever surgeon who performed a Curette Operation on me on Saturday, but ever since then my bodily organs have functioned in an orderly, painless, harmonious and perfect manner as smoothly and frictionless as move the planets in their orbits and the stars in their courses. Like the music of the spheres, that functioning is beautiful in its very unobtrusiveness. For the ease with which I shall be able to carry on heavy duties at home I shall be unendingly thankful. The smoothness of the home's running, the soundness of the children's development and health can all be traced back to the Hospital, and thus form one of the ramifications of your good work throughout the State.

Therefore thanking you,

I am,

Yours faithfully,

Humorous? Yes; but it's the kind of thing we should like to receive more frequently from the postman.

Yours, etc.,

May 3, 1936.

"SAT 99."

Congresses.

THE AUSTRALIAN AND NEW ZEALAND
ASSOCIATION FOR THE ADVANCEMENT
OF SCIENCE.

A MEETING of the Australian and New Zealand Association for the Advancement of Science is to be held in Auckland from January 12 to 19, 1937.

Any medical practitioners who wish to present papers to the Section of Medical Science and National Health are asked to communicate with the Sectional Secretary, Dr. J. Egerton Caughey, 3, Alfred Street, Auckland, New Zealand, at their earliest convenience in order that the work of the section may be arranged.

NOTICE.

THE New South Wales Post-Graduate Committee in Medicine announces that an alteration has been made in the dates of the operative demonstrations on uterine prolapse by Dr. T. G. Stevens. The demonstrations will be held at the Royal North Shore Hospital of Sydney on Thursday, May 28, 1936, at 2.30 o'clock p.m., and at Lewisham Hospital on Wednesday, June 3, at 2.30 o'clock p.m.

Books Received.

SURGICAL EMERGENCIES IN CHILDREN, by Harold Clifford Edwards, M.S., F.R.C.S.; 1936. London: Baillière, Tindall and Cox. Demy 8vo, pp. 274, with illustrations. Price: 12s. 6d. net.

POST-GRADUATE SURGERY, edited by Rodney Maingot, F.R.C.S., with an introduction by The Right Honourable Lord Moynihan of Leeds, K.C.M.G., C.B., M.S., F.R.C.S.; Volume 1; 1936. London: Medical Publications Limited; Sydney: Angus and Robertson Limited. Super royal 8vo, pp. 1758, with illustrations. Price: £3 3s. for one volume, complete set £9 9s. (the volumes are not sold separately).

THE STUDY OF ANATOMY: WRITTEN FOR THE MEDICAL STUDENT, by S. E. Whittall, M.A., M.D., B.Ch., M.R.C.S., L.R.C.P., F.R.S.; Third Edition, revised and enlarged; 1936. London: Edward Arnold and Company. Crown 8vo, pp. 113. Price: 4s. 6d. net.

ABORTION, SPONTANEOUS AND INDUCED: MEDICAL AND SOCIAL ASPECTS, by Frederick J. Taussig, M.D., F.A.C.S., with foreword by Robert L. Dickinson; 1936. St. Louis: The C. V. Mosby Company; Melbourne: W. Ramsay (Surgical) Proprietary Limited. Super royal 8vo, pp. 536, with illustrations. Price: £2 5s.

Diary for the Month.

MAY 19.—Tasmanian Branch, B.M.A.: Council.
MAY 19.—New South Wales Branch, B.M.A.: Ethics Committee.
MAY 20.—Western Australian Branch, B.M.A.: Branch.
MAY 22.—Queensland Branch, B.M.A.: Council.
MAY 26.—New South Wales Branch, B.M.A.: Medical Politics Committee.
MAY 27.—Victorian Branch, B.M.A.: Council.
MAY 28.—South Australian Branch, B.M.A.: Branch.
MAY 33.—New South Wales Branch, B.M.A.: Branch.
JUNE 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
JUNE 2.—Tasmanian Branch, B.M.A.: Council.
JUNE 3.—Western Australian Branch, B.M.A.: Council.
JUNE 3.—Victorian Branch, B.M.A.: Branch.
JUNE 4.—New South Wales Branch, B.M.A.: Clinical Meeting.
JUNE 4.—South Australian Branch, B.M.A.: Council.
JUNE 5.—Queensland Branch, B.M.A.: Branch.
JUNE 9.—Tasmanian Branch, B.M.A.: Branch.
JUNE 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments.

Dr. J. P. G. Hurley has been appointed Government Medical Officer at Corowa, New South Wales.

Dr. T. Lovegrove has been appointed Medical Officer of Health by the Wongan-Ballidu Road Board, Western Australia.

Dr. R. D. Hornabrook has been appointed Honorary Anaesthetist at the Adelaide Hospital, South Australia.

The undermentioned have been reappointed to the honorary staff of the Royal Alexandra Hospital for Children for a further period of four years: Dr. M. J. Plomley, Honorary Physician; Dr. W. Vickers, Honorary Surgeon; Dr. W. A. Dunn and Dr. Huff Johnston, Honorary Ear, Nose and Throat Surgeons; Dr. N. M. Gregg, Honorary Ophthalmic Surgeon; Dr. L. Hughes, Honorary Assistant Physician; Dr. W. M. C. MacDonald, Honorary Assistant Ophthalmic Surgeon; Dr. Keith Inglis, Honorary Assistant Pathologist; Dr. K. B. Voss, Honorary Assistant Radiographer.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi-xviii.

ST. GEORGE DISTRICT HOSPITAL, KOGARAH, NEW SOUTH WALES: Resident Medical Officer.

THE EASTERN SUBURBS HOSPITAL, WAVERLEY, NEW SOUTH WALES: Honorary Assistant Surgeon.

THE GOODBOGA DISTRICT HOSPITAL, GOODBOGA, NEW SOUTH WALES: Medical Officer.

THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND: Radio-Therapist.

WOOROLOO SANATORIUM, WOOROLOO, WESTERN AUSTRALIA: Junior Resident Medical Officer.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCHES.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Richmond District Hospital, North Queensland. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY Hospital are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-3.)

Members and subscribers are requested to notify the manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognise any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £3 for Australia and £2 5s. abroad per annum payable in advance.